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SOME IDEAS ON BUILDING GOOD WILL FOR THE TELEPHONE

"What would modern business do without the telephone?" was the theme of an advertisement recently used by a telephone company operating in Western Iowa. And a good one it was, too, for the copy dealt with the need of encouraging public appreciation of the business possibilities of the telephone. So many people take the present-day conveniences for granted that they fail to realize how troublesome it would be not to have the quick communication offered by the telephone.

That this company has the right idea in utilizing the local press for "selling its service" is not to be questioned, but there are few utilities that get the effective type of advertisement in the paper that this Iowa manager did. The advertising copy went on to show that sometimes a journey of several hundred miles might be saved through the use of the telephone; much time could be economized by making sure a prospect was in.

Business men who are mature now and who can remember when telephone service was comparatively little known, are apt to be more appreciative of the value of the telephone than the younger generation. Consequently it is more to this younger element that service companies should direct a substantial share of their advertising propaganda.

* * * *

Some time ago TELEPHONY gave an account of how the Rochester Telephone Corp. is cooperating with other Rochester utilities to place a course of lectures before the high school students, entitling the series, "Serving Rochester." This is most helpful. Yet the local newspaper advertisement also holds opportunity in this same direction. Effective copy could be headed, "Telephoning the folks about delays" and showing the school boy or girl using the telephone to advise anxious parents concerning unavoidable delays at school.

It will strike a responsive chord with all members of the family. It is good business to devote more attention to the young folks, for before long they will be your biggest patrons. You will find that it pays to have the good will of all members of your subscriber's family.

* * * *

Not long ago a large Independent telephone company operating in southern Illinois acquired some additional lines. In fact, enough added property was purchased to make good material for a story.

Accordingly, TELEPHONY sent a representative downstate to get the facts—all data pertaining to the consolidation, as well as pictures. Upon his return he was asked to relate what took place, and what particularly impressed him concerning the evidence of progress exhibited by the company.

Here is what struck him as most important and as having a very significant bearing on how the company had succeeded so well: The manager invited him to inspect the different exchanges which were located within a radius of about 25 miles from the main office. They drove from town to town, and at every one the manager made it a point to call on the local newspaper, leaving both an advertisement and a publicity story.

What is more, he handled the whole thing so tactfully that the editors promised to take care of the story to the best of their ability. The advertisement contained an announcement of the change in ownership of the lines and explained why it would be necessary to raise rates, if really good telephone service were to be had. The reason given was logical and well expressed with the result that little complaint was heard about the slight rate increase needed to supply more adequate service.

* * * *

Telephone operating men have their sales problems the same as manufacturers; probably more complex problems, too, as they deal with all sections of the public.

M. S. Sloan, president of the Brooklyn Edison Co., recently delivered an address before the public relations section of the National Electric Light Association. He struck the keynote of his talk when he gave as the definition of good public relations: "Giving the public a square deal and being sure that the public knows it is getting a square deal."

There are probably few telephone companies today which are not striving in every way they know how to give their subscribers a square deal. But it must be

confessed, the majority of these companies are dilatory to a greater or less degree in regard to the second phase of the definition, "Being sure the public knows it is getting a square deal."

This involves telling the public what your company is doing and the significance of it. It is essential to hammer home in every possible way the fact that the public is getting just treatment—a square deal.

It involves good-will advertising—telling about the company, its investment, its equipment, its personnel and their qualifications, its problems of management and rate making, its policies and how they affect the public, and the growth of the community.

Action along this line is bound to entrench any utility in the high esteem of its patrons. No matter how good public relations are, they can always be made better, and no matter how bad they are, intelligent effort will benefit them.

The Chicago Franchise.

Chicago, with close to a million telephones, has granted the Illinois Bell company a new franchise which will run for 23 years. At least, the city council, by a vote of 37 to 9, passed the franchise ordinance which now only needs the executive approval to become final—always providing some dissenters do not go into court to delay the settlement. As the matter already has been hanging fire 17 months—the original franchise expired in February, 1929—all sides desire a decision.

* * * *

As an example of modern public utility franchise the Chicago telephone grant is far from perfect. Like all such measures it is a compromise, and the company did not get the worst of the trading because it owed the city some $3,000,000 accrued compensation since February, 1929, and the city hall sorely needed the money to pay its employes.

When the seller in a business deal is desperately hard up, he seldom is able to make a very good bargain, and that was Chicago's situation in the telephone franchise negotiations.

According to the terms of the franchise, the telephone company is to pay the city compensation of not less than $2,000,000 annually for the use of the streets, and free service is to be given the police and fire departments. City hall telephones are to pay 50 per cent rates instead of getting free service as in the past.

* * * *

The chief bone of contention was over compelling the company to pay the entire cost of relocating its underground cables when Chicago begins its subway. Opponents of the franchise contended this should be made a part of the settlement for, they asserted, the company had built up a reserve of $58,000,000 from subscribers' payments for this purpose.

The company's claim was that this expense should also be shared by other utilities using the streets. In the end the ordinance went through on the theory that all the public service companies would eventually divide the cost of relocating their underground equipment.

This probably means that the subway is considered to be a distant development, and that when it arrives there will be the usual squabble between the various utilities as to what amount each will pay. However, for the time being the Illinois Bell is breathing much more easily.

COMING CONVENTIONS

United States Independent Telephone Association, Hotel Stevens, Chicago, Ill., October 14, 15, 16 and 17.

Independent Pioneer Telephone Association of United States, Hotel Stevens, Chicago, October 16.

Illinois Telephone Association, Pere Marquette Hotel, Peoria, November 12 and 13.

Traffic Records in the Dial Offices

Importance of Checking Traffic in Various Switch Groups from Time to Time in Order to Meet Changing Load Conditions—Traffic Checking Methods—Switch Counts—Second Award, Traffic Division, "Telephony's" Prize Contest

By Harry M. Bruckart,

Traffic Engineer, The Home Telephone & Telegraph Co., Fort Wayne, Ind.

The rapidly increasing use of dial equipment in both large and small telephone exchanges has brought to patrons of such exchanges a uniform grade of service not usually furnished by any other method of switching. The introduction of dial equipment, however, has made necessary changes in the methods of keeping traffic records.

Telephone service or traffic is the only thing that a telephone company has for sale, and it is important to know exactly how much traffic is being carried, not only by the office as a whole but also by each individual group of switches or trunks.

Although a telephone exchange may be carefully planned and installed, and give excellent service when first installed, such service will not be maintained unless the traffic in the various switch groups is carefully checked from time to time and rearrangements made to meet changing load conditions. For instance, take an initial installation of 3,500 lines of equipment with 2,800 working lines at the time of cutover, the excess being for expected growth.

As such an exchange would be loaded only to 80 per cent of its capacity at time of installation, there would be small danger of overload. As the capacity of the office is approached, however, it is important that traffic in the various trunk groups be checked to prevent any overload. It is not sufficient to depend on subscriber complaints to detect busy trunk groups, for subscribers seldom distinguish between the "all paths busy" signal and the "line busy" signal.

Furthermore, to wait until the subscriber complains is not a policy to be recommended, for, if additional trunking equipment is required, a considerable time must necessarily elapse before the equipment can be obtained and installed. Sometimes the remedy means transferring traffic to some other group, involving extensive changes in subscribers' numbers which might have been avoided had the condition been foreseen.

Changes in traffic may be due to abnormal growth, regrading of service, changes in rates or office boundaries, increased toll traffic and a variety of other reasons. It is usually possible, by care in assigning lines and systematic switch counts, to prevent service troubles due to trunking and to detect incipient overloads in sufficient time to provide the necessary equipment.

Working out the traffic or trunk require-

ments with dial equipment to insure satisfactory service is an entirely different problem than in a manual plant. With manual equipment, the number of operators and operators' positions depend almost entirely on the number of calls and the method used to complete calls, as the operator's time is used in the putting up

"The Keeping of Accurate Records," Says Mr. Bruckart, "Requires a Systematic Lay-out and Scrupulous Regard to Details to Insure Worthwhile Records, But the Expense Is Negligible Compared to the Results Obtained."

and taking down of connections. During the period of conversation the operator is free to handle other calls.

With dial equipment, the time element or length of conversation must also be taken into consideration. When a call is set up with dial equipment, the trunking equipment used in setting up the call is held until the calling party restores the switchhook, so that in calculating the trunking equipment required, both the number of calls as well as the holding time must be taken into consideration.

Satisfactory service requires that the trunking equipment be adequate to handle the traffic during the normal peak periods, and for economical operation the amount of equipment must be kept as low as is consistent with good service.

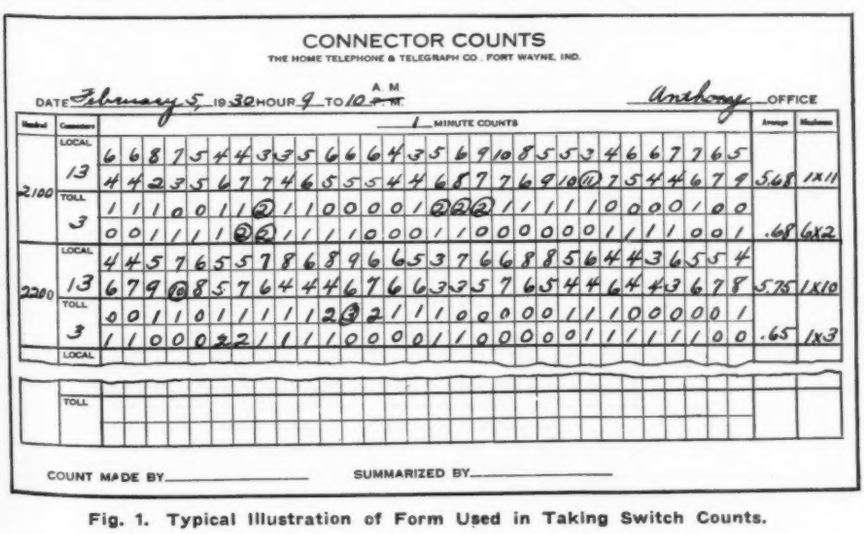
Calling rates per line and holding times for different classes of service will vary so widely that it is common practice to reduce all calls to calls of common units of 100 seconds, each known as "unit calls" or "equivalent 100 calls." Thus a group of lines originating an average of five calls per line with an average holding time of 80 seconds, would originate $5 \times 80/100$, or four "unit calls" per line.

A number of tables has been worked out showing the theoretical capacity of various trunk groups in terms of unit calls. These tables are not ordinarily required for the efficient operation of dial equipment as the problem is rather one of obtaining the highest efficiency from the equipment installed and of being able to detect overloaded conditions sufficiently in advance to be able to correct the trouble before service is affected.

In case additional trunk equipment is found necessary, the manufacturers of dial equipment will be glad to calculate the equipment necessary to carry the increased traffic and will be able to do so with a much greater degree of accuracy if complete traffic data are available.

The first step in arranging the traffic through dial equipment in an efficient manner is the grouping of the subscribers' lines into various groups in accordance with their calling and receiving rates. If a line intermediate distributing frame is employed, the problem will be simplified.

Some business places will originate a large number of calls while others, such as grocers and butchers, will have a high receiving rate and originate comparatively few calls. In practice, residence lines are all placed in one class, except that party lines with four or more stations on a line will have a considerably higher traffic value than individual or the two-party lines.



CONNECTOR COUNTS

THE HOME TELEPHONE & TELEGRAPH CO., FORT WAYNE, IND.

DATE February 5, 1930 HOUR 9 A.M. TO 10 P.M. Anthony OFFICE

Hundred	Customers	1 MINUTE COUNTS	Average	Maximum
2100	LOCAL 13	6 6 8 7 5 4 4 3 3 5 6 6 6 4 3 5 6 9 10 8 5 5 3 4 6 6 7 7 6 5	5.68	11x11
		4 4 2 3 5 6 7 7 4 6 5 5 5 4 4 6 8 7 7 6 9 10 12 7 5 4 4 6 7 9		
	TOLL 3	1 1 1 0 0 1 1 2 1 1 0 0 0 0 1 2 2 2 1 1 1 1 1 0 0 0 0 1 0 0	.68	6x2
		0 0 1 1 1 1 1 2 2 1 1 1 1 0 0 0 1 1 0 0 0 0 0 0 1 1 1 1 0 0 1		
2200	LOCAL 13	4 4 5 7 6 5 5 7 8 6 8 9 6 6 5 3 7 6 6 8 8 5 6 4 4 3 6 5 5 4	5.75	11x10
		6 7 9 10 8 5 7 6 4 4 4 6 7 6 6 3 3 5 7 6 5 4 4 6 4 4 3 6 7 8		
	TOLL 3	0 0 1 1 0 1 1 1 1 1 2 3 2 1 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1	.65	1x3
		1 1 0 0 0 2 2 1 1 1 1 0 0 0 0 1 1 0 0 0 0 0 1 1 1 1 1 1 0 0		
	LOCAL			
	TOLL			

COUNT MADE BY_____ SUMMARIZED BY_____

Fig. 1. Typical Illustration of Form Used in Taking Switch Counts.

The great increase in the toll business has directed attention more than ever before to traffic handling methods. While considerable has been written concerning traffic in manual offices, not much has been published relating to traffic in dial offices, which serve about 20 per cent of the total number of telephones in the country.

There are traffic problems to be solved in these exchanges as well as in the manual exchanges, and in his article, "Traffic Records in the Dial Offices," Mr. Bruckart tells how some of them have been handled. Mr. Bruckart has had about 12 years' experience in telephone engineering work.

After graduating from the Ohio Northern University, he entered the student training school of Automatic Electric Inc. in 1918. Following this he had experience in installation work, and then took up manual equipment engineering and dial equipment engineering, after which he was connected with the estimating and traffic engineering department of Automatic Electric Inc.

In the early part of March, 1929, he became traffic engineer of the Home Telephone & Telegraph Co., at Fort Wayne. He has recently completed plans for changing the company's tributary magneto offices to unattended dial offices with all toll operating done from Fort Wayne.

With this background of dial engineering experience, particularly as relating to traffic, Mr. Bruckart is able to speak authoritatively relative to traffic records in dial offices.

By assigning approximately the same number of lines of each class to each primary group, the traffic in each group can be kept fairly uniform. If no line I. D. F. is used, the terminating traffic must also be taken into account so as to obtain the same terminating traffic in each group. It is advantageous to assign large business subscribers in the same line of business in different groups so as to avoid simultaneous peak traffic conditions.

If an office is working anywhere close to its capacity, the traffic in the trunk groups should be checked at periodic intervals. Primary and secondary trunk groups and connector groups should be checked from four to six times per year, and selector trunk groups three or four times a year.

The simplest, and perhaps most efficient, method of checking traffic is by taking switch counts. By this method the number of switches in use in each group are counted once a minute during the busy hour. One girl without much practice can readily take care of six shelves of 20 switches each. With Strowger switches,

SUMMARY SWITCH COUNTS

Group Frequency Connectors Time 9 A. M. To 10 A. M

Office An thony Month February 5, 1930

GROUP NUMBER	No. OF SWITCH	FIRST COUNT AVERAGE	FIRST COUNT MAX.	FIRST COUNT PEG COUNT	FIRST COUNT M. T.	SECOND COUNT AVERAGE	SECOND COUNT MAX.	SECOND COUNT PEG COUNT	SECOND COUNT M. T	SUMMARY AVERAGE	SUMMARY MAX.	SUMMARY PEG COUNT	SUMMARY M. T.
				LOCAL FREQUENCY CONNECTORS									
2100	13	5.68	1 x 11	130	149								
2200	13	5.75	1 x 10	134	154								
				TOLL FREQUENCY CONNECTORS									
2100	3	.68	6 x 2	10	245								
2200	3	.65	1 x 3	11	213								

Fig. 2. Form Giving Summary of the Switch Counts as Recorded in Fig. 1.

the switches in use are readily noted by the wiper shaft being out of the normal position.

Groups of repeaters or groups of trunks which are scattered through a distributing frame are counted at the distributing frame with the use of a trouble lamp. The tip of the lamp is passed over the sleeve or private terminals of the trunks and the lamp will glow each time a busy trunk is encountered. A typical illustration of the form used in taking switch counts is shown in Fig. 1.

The number of trunks in use each minute is listed, and at the end of the hour the total and average for the hour are summarized and also the maximum number of trunks in use at any time.

In taking traffic counts it is important to remember that the number of switches busy on any shelf represents the traffic from a preceding bank of switches only when all of the outgoing trunks from the preceding group are connected to that particular group of switches. Where the trunks are distributed over a number of shelves of groups, the outgoing trunks from the preceding group of switches should be counted by means of a trouble lamp. Fig. 2 shows a summary of the counts taken in Fig. 1.

If traffic meters are installed to register the number of calls, the meters should also be read at the beginning and end of the traffic count. The importance of having adequate traffic metering equipment is usually under-estimated.

The figures obtained from these traffic counts are used in a number of ways. The average and maximum load for the various primary groups are compared. Where the trunking from all primary groups is the same, the loading should be equal.

If any groups show a decided overload over others, no more lines should be assigned in those groups. It is not usually necessary to make any changes, as the normal number of disconnects and moves will bring the traffic down to a normal level within a few months.

The average and maximum for each group are also compared to the previous readings, preferably for a year or more, to determine the trend of traffic growth. A form used in keeping these comparative figures is shown in Fig. 3. The actual traffic in each group should also be compared to the theoretical capacity of the trunks if possible.

As the theoretical capacity of the group is not always available, the maximum number of trunks in use at any one time may be used. As a rule the maximum number of trunks in use should always be kept approximately 10 per cent under the number of trunks installed in order to provide a satisfactory grade of service.

Extensive studies indicate that overflow or lost calls will start piling up if the traffic is allowed to go beyond that point. It must be remembered that if a subscriber encounters an "all paths busy" condition, he keeps on calling until he finally does get through, loading the equipment with perhaps a half-dozen calls instead of one if the call had gone through on the first attempt.

Where overflow or lost call meters are installed on primary trunk groups, the average number of blocked calls during the busy hour should not be over 1/10th of 1 per cent. Unfavorable service reactions are bound to follow if the number of calls goes above this amount. A blocked call will either result in the subscriber getting an incorrect number or no number at all, and it is human nature for the subscriber to remember the one call that went astray and forget the 999 that went through correctly.

In taking switch counts it may be found that the peak load will not always occur at the same time of day on different classes of trunks. This is especially true of toll traffic which is normally heaviest on Saturday mornings when the local traffic is comparatively light; also the season of the year will have an effect on the time of the heaviest traffic. In most cases it is possible to determine the peak traffic period by observing the activity of the switches.

These switch counts provide another valuable item of information. If the counts are taken at one-minute intervals, the total at the end of an hour will indicate the call-minutes the trunks in that group were in use during the hour.

By dividing the number of call-minutes by the actual number of calls as registered on the peg count meters, the average holding time will be obtained. Thus if a group of 10 trunks shows a total switch count of 285 call-minutes and the peg count meter indicates 190 calls, the average holding time would be 285/190 equals 1.5 minutes or 90 seconds.

In this way the average holding time on a large enough number of calls may be obtained to get a true average. With the aid of actual holding time and calling rate

TRAFFIC ANALYSIS

GROUP Local Frequency Connectors Anthony OFFICE

GROUP	NO. OF SWITCHES	ENG. CALLS U.C.	Date Dec. 1929 ACTUAL CALLS U.C.	Date Dec. 1929 MAX.	Date Feb. 1930 ACTUAL CALLS U.C.	Date Feb. 1930 MAX.	Date ACTUAL CALLS U.C.	Date MAX.
			284	2 x 12	184	1 x 11		
15	13	197	198	2 x 9	122	2 x 7		
			190	1 x 10	180	1 x 13		
16	13	197	208	1 x 10	112	1 x 6		
			277	1 x 12	141	7 x 7		
17	13	197	122	1 x 8	181	2 x 8		
			226	4 x 9	183	1 x 10		
18	13	197	202	1 x 9	148	1 x 7		
			124	2 x 7	174	2 x 9		
19	13	197	174	2 x 9	153	2 x 10		
			164	1 x 10	162	1 x 8		
10	13	197	140	1 x 9	189	3 x 8		
			177	2 x 9	136	3 x 9		
21	13	197	189	2 x 9	204	1 x 11		
			130	1 x 9	154	4 x 8		
22	13	197	172	1 x 9	207	1 x 10		

Fig. 3. Form Used for Recording Comparative Traffic Figures.

data, rearrangements and additions may be laid out with mathematical accuracy and without providing an unnecessary margin of excess equipment.

A number of recording machines have been developed for automatically recording the holding time, number of calls, number of times all trunks are busy, length of time all trunks are busy and other information, but such machines can only be used on one group at a time and their use is limited to the obtaining of special information.

Service observations, if carefully taken, furnish a valuable source of information for checking the traffic over the various trunk groups and detecting congested trunk conditions. These observations should indicate all calls blocked, due to busy trunk groups and also the point at which the call was blocked. When the number of blocked calls at each point are summarized for a month, groups in need of immediate attention will be readily seen.

The methods of keeping traffic records described here can be applied to any office using dial equipment regardless of size. The keeping of accurate records requires a systematic layout and scrupulous regard to details to insure worth-while records, but the expense is negligible compared to the results obtained.

Five District Meetings Held in Southern Minnesota Last Month.

The Minnesota Telephone Association of St. Paul held five district conferences in the southern part of Minnesota last month, which were reported unusually successful, having a total attendance of 270 Independent telephone people.

The first meeting was held at Kasson on July 21 with a record attendance, totaling 69. The number of Independent telephone companies represented was 20 and the meeting was very interesting to all present.

The next two meetings were held at Blue Earth on July 22 and at Worthington on July 23. The total number of persons registered at the meeting held in Blue Earth was 55, with an attendance of 224 at the Worthington meeting. Sixteen Independent companies were represented at these two meetings.

On July 24, the Minnesota association held a conference at Marshall where 59 telephone people gathered to enjoy the carefully-planned program.

A photograph was taken of those attending this meeting, and in the background may be seen the telephone building which is being constructed by the Tri-State Telephone & Telegraph Co. to house its new central office equipment and toll board. Its construction is well along as indicated by the steel window sash and walls of the building. The various talks given at this meeting set forth many helpful hints for the development of the business.

The last conference was held at New Ulm on July 25 where 63 persons registered. At this meeting 13 Independent companies were represented.

The total number of Minnesota Independent telephone companies represented at these five district conferences is 57. The meetings were very successful and many instructive ideas for telephone development were presented at the different programs. Secretary J. C. Crowley attended all of them and President Todd was present at several of them.

The conferences for the northern part of Minnesota will be held during the last week of August.

The District Conference Held at Marshall, Minn., Had An Attendance of 59 Independent Telephone People. In the Background May Be Seen the New Central Office Building Now Being Constructed by the Tri-State Telephone & Telegraph Co.

Iceland Steadily Improving and Extending Its Telephone System.

Iceland, the north country reputed to be the "oldest republic in the world," during the past year further developed its communiciations' system by completing a telephone circuit around the entire island, according to a report from the director of Icelandic telegraphic system, recently transmitted to the U. S. Department of Commerce by Assistant Trade Commissioner Paul H. Pearson at Copenhagen.

Nearly every little town and parish in the country can now be reached by telephone and it is hoped to so equip every farm within the next few years.

Beginning in 1908 with the laying of the first submarine cable between Iceland and Denmark, via the Faroe Islands, the telephone and telegraph systems have steadily enlarged and improved and have contributed materially to the economic advancement of the nation, according to the director.

At the present time in all the larger cities and most of the smaller trading places the state telegraphs have central telephone systems. The largest exchange is naturally in Reykjavik, the capital, where there is an old system with 2,400 numbers, all of which are in use. Thus the applications of new subscribers, of which there are around 400, must await the installation of the new automatic telephone system which has been purchased from a concern in Stockholm.

The new installation will be able to care for 4,000 subscribers and provision is made to augment this number as necessity demands. It is expected to be ready for operation by August, 1931. A second automatic telephone exchange is also being installed at Hafnarfjord.

A. T. & T. Purchases New Jersey Tract for Laboratory Site.

The American Telephone & Telegraph Co. has purchased a tract of nearly 200 acres near Elizabeth, N. J., where it will construct a laboratory to relieve the pressure for space now felt by the Bell Telephone Laboratories, Inc., New York City.

The tract is in the hills west of Elizabeth on top of the second range of Watchung Mountains. Adjoining the Watchung Reservation on one side, the property extends to within about half a mile of the Murray Hill railroad station on the other.

According to an announcement made August 1 by Dr. Frank B. Jewett, president of Bell Telephone Laboratories, it is proposed to establish on this site a laboratory for many of the problems in communication which can best be studied in the quiet atmosphere of the suburbs.

Buildings as they are gradually erected will be of moderate height, and their architecture, as well as the landscaping, will not be out of harmony with the residential character of the neighborhood.

Final decisions have not been made as to the first groups of scientists who will work there, but it is expected that plans will progress far enough to allow ground to be broken in the autumn.

Value of Organization Within Industry

Outstanding Success of Country's Communications Rests Entirely Upon Organization—Picture Companies Without Organizations Dealing With Non-Operating Problems—Address Before the Pennsylvania and New York Conventions

By J. Warren Safford,
President, Ohio Independent Telephone Association, Troy, Ohio

When I was first invited to address you on the subject of "The Value of Organization Within the Telephone Industry," my first reaction was to decline the nomination. We have all heard so much and read so much about the value of organization in general, that it seemed to me to be a subject that had been hammered home so consistently that every living being must know all about it.

My secondary reaction, and the one that made me decide to do the best that I could with the subject, came a little later the same day when I picked up an evening newspaper and read a long article on the subject of farm relief.

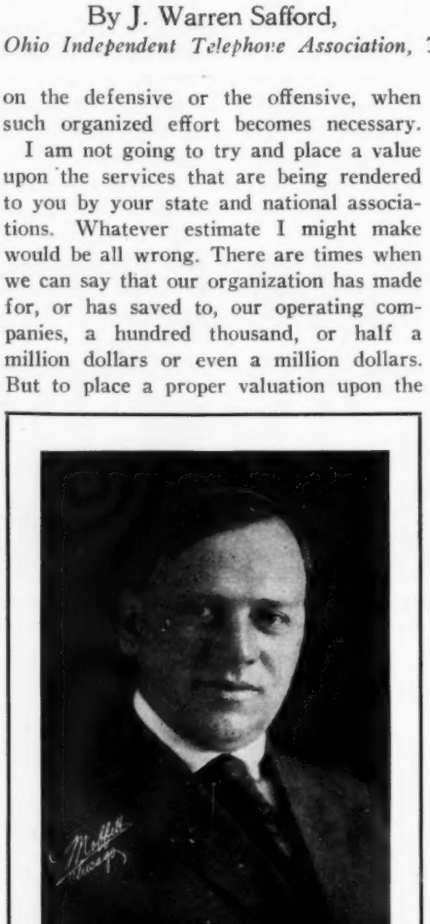
As a few of you are doubtless aware, the average farmer is experiencing some little difficulty in making both ends meet, and the government is wondering just what to do about it. Due to the fact that the farmers of this country are unorganized as a national group, and largely unorganized as state groups, there has never been developed in the United States a sound, far-reaching, agricultural program that would provide for the constructive development of this immense and vital industry.

In thinking about this lack of organization on the part of almost one-half of our American people, I came to the conclusion that we in the telephone business need to have the subject of organization brought before us at rather frequent intervals. We must not be permitted to lose sight of the fact that by working together we can and do exercise a powerful influence for the progressive, consistent, continuous development of our own and each other's businesses.

Taken by itself, the largest interest that is represented at this convention is just another corporation. If it happens to have a few brilliant individuals upon its payroll, it may manage to carry on its operations in fairly good shape. When it comes to matters of national and state-wide concern, however, that corporation is in danger every moment. Legislative and economic storms can cause it incalculable grief and expense, and cost its stockholders heavy loss.

As a unit in a progressive, organized telephone group, however, every interest and every company in the entire telephone industry, is in shape to devote its undivided attention to the operating end of the business, the earning of dividends and the improvement of service, only turning on the defensive or the offensive, when such organized effort becomes necessary.

I am not going to try and place a value upon the services that are being rendered to you by your state and national associations. Whatever estimate I might make would be all wrong. There are times when we can say that our organization has made for, or has saved to, our operating companies, a hundred thousand, or half a million dollars or even a million dollars. But to place a proper valuation upon the actual benefits that we receive as a result of organization effort among our companies is a blunt impossibility.



"Do No Take Your Association Too Much for Granted," Suggests Mr. Safford. "Look Upon It As a Very Powerful and a Very Necessary Instrumentality for the Preservation of Your Business."

Is there any man here who does not appreciate the things that a certain radical element would like to do to his company if it were to be given half a chance? This group has not succeeded in bankrupting and demolishing the telephone business, for the reason that the telephone industry is organized and ever on the alert. The outstanding success of the wonderful communications system that we have builded in this country rests entirely upon organization.

We are still a comparatively young industry. We have accomplished marvelous things in a short time. We have fought with the Bell system, and among ourselves, like so many wild cats, at various times; but throughout the history of the business we have maintained an organized front that has been and will continue to be our salvation.

The new problems that are confronting the Independent telephone field today are not at all similar to those that we faced yesterday and the day before. They do not deal with such elemental things as the right to operate, the ability to obtain financing or with the matter of actual competition. The new issues are equally serious and more complex than any we have known heretofore.

At present we have a monopoly of our own field. We can obtain ample capital for all necessary purposes. The Bell company instead of being our local competitor has become to us a wholesaler of long distance service in the national and the international field.

Our new problems are partly political, partly technical and partly economic. Their solution demands a closer study of the telephone industry and a more complete understanding of the details of telephone operation than was the case with the older questions of organization and construction.

Our business during recent years has assumed responsibilities beyond anything of which the pioneers ever dreamed. It has become one of the pivotal industries about which all other business and all other commerce revolves. Communication and transportation are the twin necessities most important to our national life. It is our immediate task to keep in time with the ever-faster tempo of modern development.

I am sure that it is pleasing to all of us to look upon the picture that the utilities business as a whole presents today. These properties in the aggregate represent the useful investment of billions of dollars of the people's money.

They are not Titans of industry dedicated to the amassing of great wealth for a few persons. They are properties in which the dollars of literally millions of humble workers meet with the dollars of others more fortunately placed, and join in rendering a vital service to every American citizen, and in furnishing employment to a vast and always increasing army of men and women.

To me it will always be a marvel that a handful of selfish men in public life seem to delight in attacking the public

utilities. What greater monument to the honesty and integrity of the leaders in these great industries has ever been erected than is represented by the immense utilities investment we have in this country?

To the excited cries of various political-minded creatures against the utilities, the public has silently but effectively replied, with the furnishing of new millions of dollars for the building of more telephone exchanges and facilities, for the erection of more electric light and power stations and lines, and for the extension of gas, railroad and other utility properties.

I am frankly of the opinion that the federal courts in their decisions touching upon utility matters, rates and valuations, have more nearly expressed the real American viewpoint than those other political agencies that have so frequently tried to deprive these companies of their rights and proper earnings.

The courts in rendering their decisions have not been thinking of the campaign for office next fall or next year. They have not been thinking in terms of newspaper publicity. They have been thinking of law and of justice, of the constitutional rights of the companies involved, and of the best interests of the United States of America.

Looking into the future in our state of Ohio, I am looking forward to the day when we will have a form of utilities regulation that will function with the same fearlessness and courage and with the same degree of promptness that now characterizes our federal bench. There is no sound reason why this should not exist; and when it does come it will be largely the result of organization effort.

Legislation that delays business, or legislation that seeks to exploit the owner of utility property in favor of the consumer or the politician, is unwise in theory and unsound in practice. It is akin to graft itself. It is unfortunate that it is so difficult to bring the average citizen and consumer to realize that the politician who promises to do a lot of unthinkable things to the utilities companies cannot make good his promises.

These men can sometimes prevent a company from collecting its dues for a period of months or even a year or two, but eventually the real spirit of America, as represented by the constitution and the courts, comes to the rescue of the company. Untold millions of taxpayers' moneys have been squandered in litigation against utilities that has been carried on for politics only.

These political campaigns against the utilities and particularly in the case of the telephone companies have failed because of the excellent organization that has existed throughout the industry. As a result of this organization, individual companies have known what to do when they have been menaced by radical foes. The power of group organization has kept many insane laws off the statute books.

Through organization contacts we have learned how we can best serve our subscribers and how to maintain our properties and make them produce a fair rate of return for the benefit of the stockholders who made wire communication possible. Through organization we have worked out countless operating economies and improvements.

Through organization we have come to a broader understanding of our responsibilities and our duties to the public. Through organization we have learned that there is an answer to every problem. That somewhere within our affiliated group there is someone who will give us that answer.

I could describe to you the manner in which our own Ohio association operates and the many valuable things that it is constantly doing for the member companies. I refrain from doing this because you are already aware of the manner in which a state association should function.

In Ohio any company can come to the association at any time with any problem. The same is true in your own state. Some companies make it a practice to obtain the largest possible benefit from the organization. Other companies pay their dues but fail to take full advantage of the services the association officers and directors are happy to render.

Do not take your association too much for granted. Look upon it as a very powerful and a very necessary instrumentality for the preservation of your business. Take the same interest in the association's success that you take in the success of any other company undertaking that means a great deal to your future.

If you look around you, you will oberve that the unorganized portions of our population are largely unsuccessful and unhappy. It is these people who are harassed and exploited. It is these unfortunate individualists who pay the long price for everything that comes to them.

Take an active interest in association work. If you are qualified to do so, become one of the leaders in planning for the future of the organization and in designing new tasks and new undertakings for it to handle. You will find a keen interest and much personal profit in maintaining a close identity wtih the association and with the outstanding leaders in your field.

Finally, if we are to maintain for greater organization in our industry, it must be justified by certain economic fundamentals that bring to all parties concerned greater benefits and more sound accumulated values.

Organization that has as its only purpose benefits for one powerful group as against another without regard for a square deal to all, is selfish in the extreme and is not justifiable by the standards of modern business.

Organization that adopts the principle, "to have and to hold," will not endure in our American life.

The organization I have in mind is one that develops strength and influence to be applied only upon the highest plane of business ethics; utilized as a powerful vehicle by which the interests of the investor will be safe-guarded, thus giving public confidence in the soundness and stability of the industry's securities, so that the wealth of a nation will quickly respond to the ever-increasing demand for expansion and development.

That likewise guarantees to the ever-increasing army of men and women all over the nation engaged in this utility service, greater opportunities, comforts and happiness that they may more loyally serve and spend their human energies in the prosecution of their daily tasks.

Thus, as a whole, the industry adequately financed, enjoying public confidence manned by earnest and industrious employes, devoting their lives to their chosen professions and vocations moves ever onward to new and greater responsibilities in furnishing to an impatient world, communication service.

We must remember at all times that when accorded public confidence and support, there is a corresponding responsibility that we must solemnly assume—that of giving a full measure of public service for every public dollar.

Through a typographical error, the name of D. Johnstone Sinclair, of London, England, was omitted from the list of directors of the Associated Telephone & Telegraph Co. in the article that appeared in the July 26 issue of TELEPHONY. Mr. Sinclair is an active member of the present board and his name should have been included with the other members in the recent report.

"Accidents" Like This Lend Spice to Cablemen's Lives.

A gang of men were digging a ditch at Steveston, in British Columbia, Canada. They found what appeared to them to be a log of wood, so they sawed through it in two places to get rid of it. About 200 Steveston telephones went out of service as a result.

The "log" was actually a wooden duct that contained a 200-pair telephone cable, and the workmen had cut out a section of cable about 14 inches long.

Percy Turley, cable splicer of the British Columbia Telephone Co., and Merrill Fallis, his helper, were rushed to the rescue, and they worked from 3 o'clock in the afternoon until 7 o'clock the following morning, splicing in a new section of cable and restoring service. Lloyd Purdy, supervising foreman of cable splicers, also went without a night's sleep because of the trouble.

Psychologist Tests Telephone Operators

Experiments in Testing Operators of Lincoln Telephone & Telegraph Co., Lincoln, Neb., by Psychological Methods Checks Over 90 Per Cent With Actual Ability—Equipment Used to Measure Capability in Advance of Employment

By H. T. Dobbins

Dr. Charles Fordyce, chairman of the department of educational psychology and measurements at the University of Nebraska, has just concluded a set of experiments in the plant of the Lincoln Telephone & Telegraph Co. with a group of 48 telephone operators as subjects of himself and his assistants.

The problem in mind was that which haunts the managers and supervisors—how to guess right in selecting help; who of the applicants ought to be turned down at the beginning and thus save time, money and patience; and why so many girls fail after a few weeks of trial.

As a result of these experiments, Dr. Fordyce authorizes the statement that a method can now be devised whereby telephone companies can quickly and scientifically choose from the applicants, with great accuracy, those who will make the best operators. The problem required some advance study as to the bases upon which those who employ operators have been working and their relation to psychology, and then to determine if it is possible to objectively measure the capabilities of a person in advance of their employment. Dr. Fordyce says this can be done.

The operators chosen for the tests were picked by the supervisors, and were unknown to the testers. Some were chosen from the most expert operators, some were of average ability and others had been rated below the average. The scientific tests were then given the selected operators, who were graded according to their ability as shown in the tests.

Twelve supervisors, who were not told what the tests had shown, were asked to grade the girls according to their ability as shown on the switchboard. When these gradings were compared with those made by the scientists, it was found that 91 per cent of those who had been ranked highest by the placement tests, were also ranked highest by the supervisors.

The work was seriously undertaken and not merely a scientist's experiment. In order to find out personally what qualities and activities are required of skillful operators, Dr. Fordyce took a place for a time at the switchboard so that he might discover the various functions involved. He spent some time in manual exchanges in New York City and Chicago, as well as several days in the Lincoln automatic exchange.

Officials of the Lincoln company are highly pleased over the results, as the turnover of operators remains large, and the best that has been possible in the past has been to interview applicants and trust to trained personnel judgment. There are no scientific tests now in use in the telephone field to determine the efficiency of operators, Dr. Fordyce says, beyond simple intelligence tests.

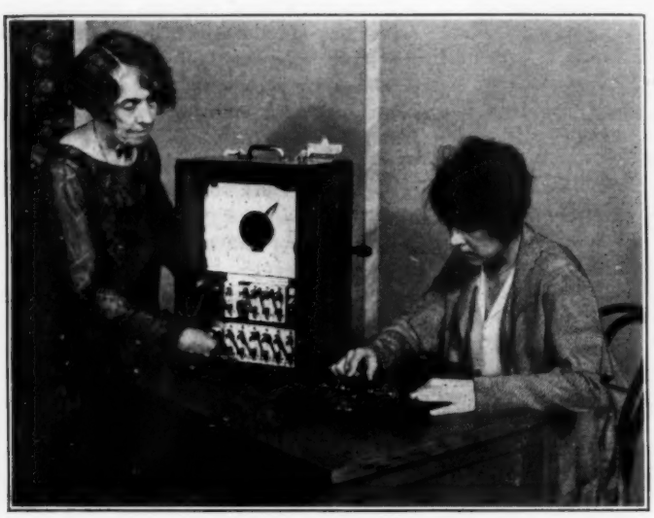
Operating at a switchboard is not a purely or largely automatic effort. It was found that there are more than 20 psychophysical processes used in getting a number for a subscriber. Among the most important of these various processes are:

Auditory acuity or sharp hearing, to get the number correctly from all kinds of voices; visual acuity or quick eyesight, to detect the call signals; color discrimination; deftness in arm, hand and finger movements to make the switching movements necessary; mental accuracy and memory, to avoid wrong numbers; sustained attention and quick reaction to enable her to give constant effective service; space discrimination, to judge her work at the board; distinct pronunciation, resonance and other essential voice qualities; and finally endurance to withstand the strain of the work.

The next step was to measure these factors by using instruments that measured them in the operator. More than a dozen were used. The first test given is the tweezer test which measures hand and finger dexterity, such as is needed in handling board equipment. The apparatus consists of a metal plate with a hundred holes into which steel pins are placed with a pair of tweezers.

Experience in this work, it had previously been found, had little to do with increasing speed. Many in past tests displayed as great dexterity as those who had been for years engaged in work requiring finger dexterity. It, therefore, indicates native capacity, the doctor says.

Memory and sustained attention tests included giving instructions for connections where two or three numbers were included. Keenness of eyesight is determined first



Instrument Which Measures Reactions to Sounds and Lights in Hundredths of a Second—Testing Eyes for Strength by Means of Special Equipment Devised by the Psychological Department of the University of Nebraska.

by finding which eye is stronger. In the endurance test, switchboards are so placed as to make plain those who first tire. Girls below normal height and short arms were found not to make efficient operators.

Taking the Tweezer Dexterity Test—Attention and Number Memory Measuring Device.

The final test brings the person being tested face to face with a complex instrument designed and made at the state university. By throwing various switches, the instrument brings into operation several different lights and horns which test such qualities as keenness of hearing, visual discrimination, alertness, speed movement, concentration, accuracy, general intelligence and endurance.

As a light appears, or a horn is sounded, the subject answers by an appropriate telegraph key, the elapsed time being registered in hundredths of a second, the average time being 15 hundredths.

Telephone Cables in New York Financial District Fail.

More than 2,700 telephone lines in the financial district of New York City were put out of service early on July 24 when rain and mud entered telephone cables broken in the course of subway excavation work, in lower Broad street. The lines affected were served by the Hanover, Bowling Green, Whitehall and Digby central offices, all of which are located in the 104 Broad street building.

Regular and emergency repair forces of the company succeeded in restoring service on 600 lines by noon of that day. Work continued throughout the day and night as well, and only about 500 telephones remained out of service at the opening of business on July 25. A heavy rain the previous evening undid practically all that had been accomplished up to that time to restore the 2,700 lines out of service.

The violence of the downpour quickly refilled with water and mud the subway excavations in lower Broad street where telephone forces had been working all day, and it was again necessary to use pumps and shovels to remove water and mud and to begin again the replacement of cables and splicing of lines.

Repairs were hampered also by the fact that workers from various companies having sub-surface installations had to work together in restricted quarters. Regular and emergency forces from the telephone company worked with such speed, however, that there were comparatively few financial and brokerage houses without practically normal service the next day.

Ten cables in all were affected. The damages were limited to sections of cables at Broad and Williams streets and Broad and Beaver streets. Here as at other points in the subway construction work, the contracting company is replacing the street and sub-surface equipment of various kinds above the roof of the new subway. In this work, telephone cables have been moved by the subway builders from their usual positions, supports and coverings. This, according to the company, tends to produce breakages, which may permit water to enter the cable sheaths.

Telephone engineers state that the damage would have probably been much more extensive but for the alternative routings of cables as a precaution against just such interruptions. With the lines serving a building entering it by more than one cable route, it is possible to continue service for a part of its tenants, even if the other route has been damaged.

By actual count 2,718 lines were out of service before repairs began. More than 1,000 of these were private lines, mainly between telephones in financial and brokerage houses; 190 were tie lines between the headquarters and branch offices of various houses and institutions, and 211 were circuits leased for private telegraphic purposes.

Connecticut Subscribers Changing Residences More Than Ever.

According to records of the Southern New England Telephone Co., Connecticut people are moving and changing their places of residence and business at a more rapid rate than ever before. Comparison of the records of telephone installation, removal and transfer for the past year with those of five years ago shows that it is necessary to shift or remove 18 more telephones for every 100 installed than was required in 1924.

Last year, for every 100 telephones installed it was necessary for the company to remove or transfer 75, leaving a net increase in stations of only 25. Five years ago, only 57 telephones were removed or transferred from one location to another for each 100 installations, the net increase in 1924 having been 43 stations.

According to the actual figures, the company in 1924 installed 39,600 new telephones, removing or transferring 22,568, while last year 82,430 stations were added and 61,641 removed.

Although there are many causes to which the removal of this large number of telephones may be attributed the chief reason is change of residence or place of business, particularly the former.

During the late spring and early summer, thousands of people in the state move from winter to summer residences either at the shore or in the country; and most of these people have their telephones moved with them. In the fall, when these people return to their city dwellings, their telephones must be again transferred.

Prices in the Metal Markets.

New York, August 4: Copper—Quiet; electrolytic spot and future, 11. Tin—Steady; spot and nearby, $30.20; future, $30.50. Lead—Firm; spot New York, 5.50c; East St. Louis, 5.40c. Zinc—Easy; East St. Louis spot and future, 4.55c. Antimony—8.37c. Quicksilver—$119.

Personal Notes from the Field

John W. Miller of Kaufman, Texas, is now vice-president, treasurer and a director of the Gulf Telephone Co., Tyler, Texas.

Mr. Miller, who is a son-in-law of Judge S. A. Lindsey, president of the Gulf States company, was born and reared in southeastern Nebraska. After attending high school and business college he entered the University of Nebraska, taking courses first in arts and science and then in law. After he left the university, he taught school for a year.

Then he became a district agent for the New England Mutual Insurance Co. and loan agent for the Northwestern Mutual. He also represented the McNish Land Co. for a time.

In 1917 Mr. Miller enlisted in the United States Navy, being commissioned as naval aviator. He was discharged after the war after he had risen to the position of instructor on naval planes at Miami, Fla.

He then went to Houston, Texas, with the Companio Mexicana De Petroleo, "El Agulla," a subsidiary of the Royal Dutch Shell. He became district superintendent for the company on the Isthmus of Tehumtepec. A revolution came along and he gave up his job in short order, deciding that the United States was safer.

Returning to Texas Mr. Miller took up residence in Houston, entering the oil business for himself. After remaining in the South Texas city for a time he moved to Dallas, and bought and operated the Mesquite telephone exchange.

He traded the Mesquite and Elam exchanges for the Kaufman exchange and moved to that city from where he went to Tyler to assume his duties as vice-president and treasurer of the Gulf States Telephone Co.

R. E. Putnam, of Madison, Wis., has been appointed general commercial superintendent of the Illinois Commercial Telephone Co., with headquarters at Murphysboro, Ill.

For about two years Mr. Putnam has been manager of the security sales department of the Illinois Commercial Telephone Co. and Commonwealth Telephone Co. of Wisconsin. Prior to that he was manager of the exchange of the Illinois Commercial Telephone Co. at Belvidere, Ill.

William O. Kurtz has been appointed general manager of the Illinois Bell Telephone Co., Chicago area. Mr. Kurtz succeeds A. H. Mellinger, who has been elected vice-president of the company in charge of operation.

Mr. Kurtz is a graduate of the Sibley College of Engineering, Cornell University, class of 1905, with the degree of M. E. He entered telephone work the same year in the engineering department of the New York Telephone Co. Later he was associated with the Bell Telephone Co. of Pennsylvania and the American Telephone & Telegraph Co. In 1924

William O. Kurtz, Newly-Appointed General Manager of Illinois Bell Telephone Co., Chicago Area, Entered Telephone Field in 1905 with New York Telephone Co. Mr. Kurtz Was Recently Elected President of the Society of Western Engineers.

he went to Chicago as chief engineer of the Illinois Bell Telephone Co. and in 1928 he was appointed general manager of the company's state area, which includes the territory of the company outside the city of Chicago.

Mr. Kurtz has been active in engineering society work and is now president of the Western Society of Engineers. He is also a member of the American Institute of Electrical Engineers.

Leland Hume, Nashville, Tenn., vice-president of the Southern Bell Telephone & Telegraph Co., retired on July 1 from active telephone work, after nearly 45 years of service.

Mr. Hume entered the service of the Cumberland Telephone & Telegraph Co. October 16, 1885 and five months later, on his 22d birthday became its treasurer.

A year or so later he was appointed district manager for the west part of the state of Tennessee, and removed his headquarters from Nashville to Memphis. July, 1890, noted his election as secretary and assistant general manager of the Cumberland system, and for the next 25 years Mr. Hume was the operating head of the Cumberland company.

At the time the American Telephone & Telegraph Co. secured control of the Cumberland system in 1912, and made it a part of the Bell system, the headquarters of the company were moved to Atlanta and Mr. Hume was elected to the office of vice-president, which office he held with much credit both to the company and himself until his retirement.

Mr. Hume was the founder of the Cumberland Telephone Journal, which was the first employes' magazine issued by a telephone company.

The publication appeared monthly for a period of ten years, at which time the name was changed. Since then it has been published under the name of "The Southern Telephone News." The value and the advantage of a monthly company magazine such as was started by Mr. Hume has been recognzed and this idea adopted by other telephone companies the world over.

Another interesting thing in Mr. Hume's achievements is that his company, then the Cumberland company, was the first to offer the stock purchase plan to its employes. This was done under date of January 1, 1897. As a result, when the control of the company was secured by the American Telephone & Telegraph Co. there were approximately 500 employe stockholders.

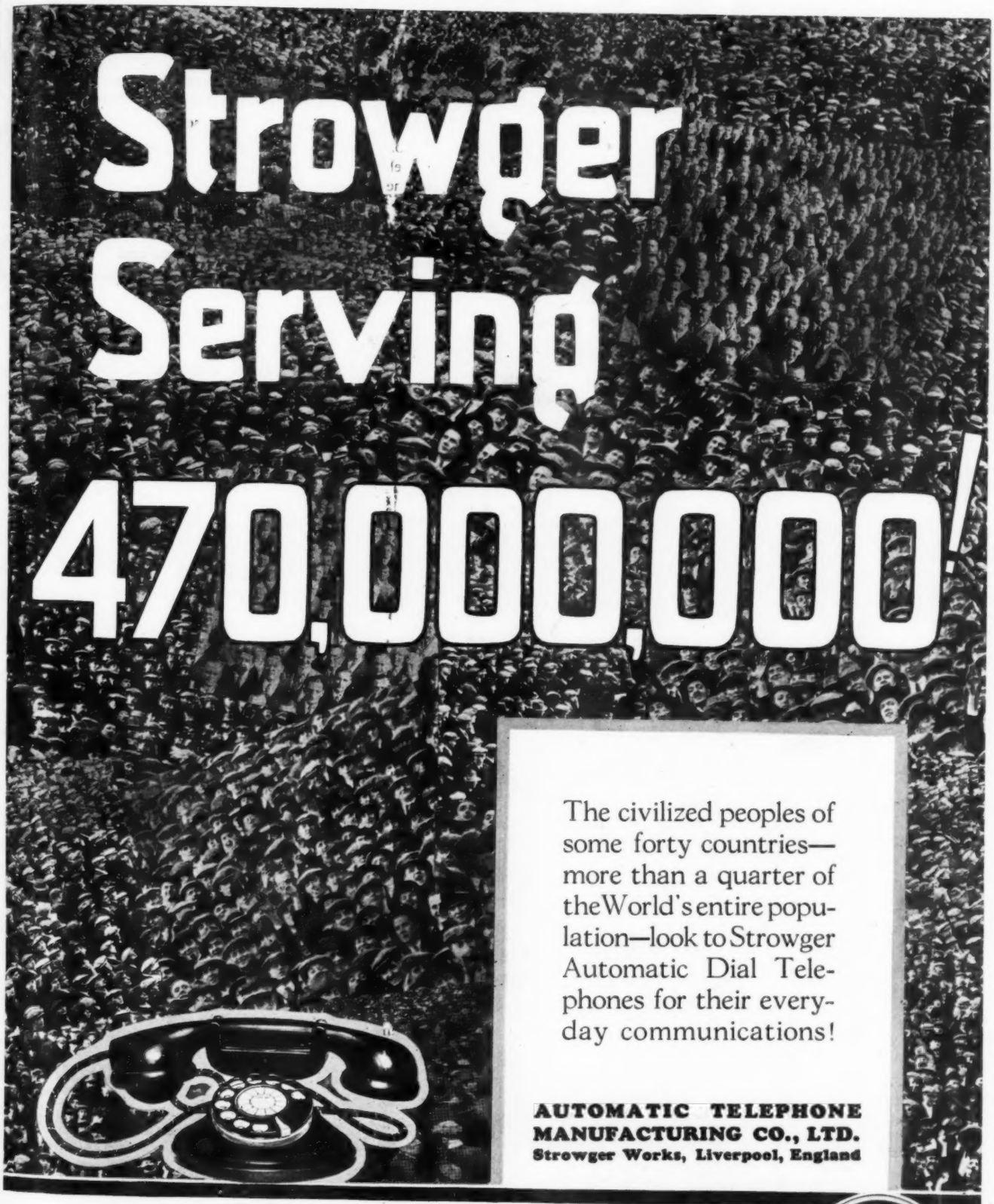
The Cumberland company was also the first to inaugurate the loan and savings plan, which resulted in many of its people acquiring the habit of thrift, owning their own homes, owning telephone and other stocks.

Being somewhat of a pioneer itself, the Cumberland company was the first to recognize the value of meetings of the employes. For years it followed the practice of holding such meetings, which were attended by the officials, the superintendents, district and local managers and many of the other employes.

In all of his achievements, however, Mr. Hume seems to be most proud of his company, the Cumberland Telephone & Telegraph Co., through its officials being so fortunate as to bring into the service so many young men who developed into outstanding color-bearers for the cause of telephony as well as in other lines of endeavor.

Among these may be mentioned H. Blair-Smith, who for many years has been treasurer of the American Telephone & Telegraph Co.; and Ben S. Read, former president of the Mountain States Telephone & Telegraph and for the past seven years president of the Southern Bell Telephone & Telegraph Co.

These are only the outstanding high spots of Mr. Hume's years of activity in the field. They are sufficient to indicate that he has always been highly regarded in the field.



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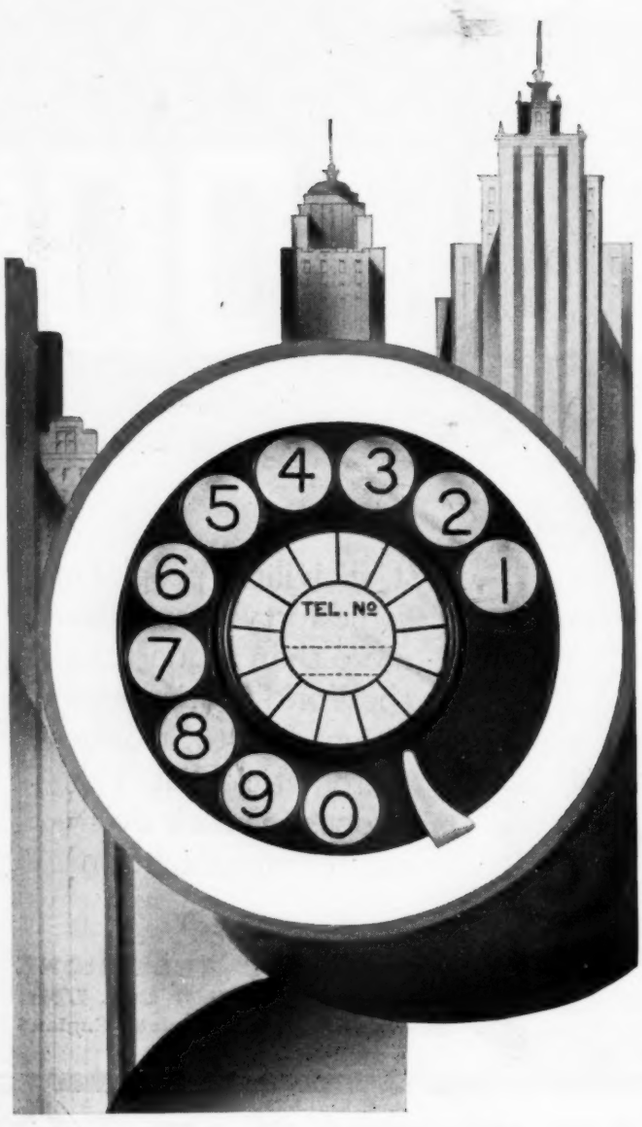

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Here and There in Telephone Work

Plan for Quickly Paying Bills at Company's Office.

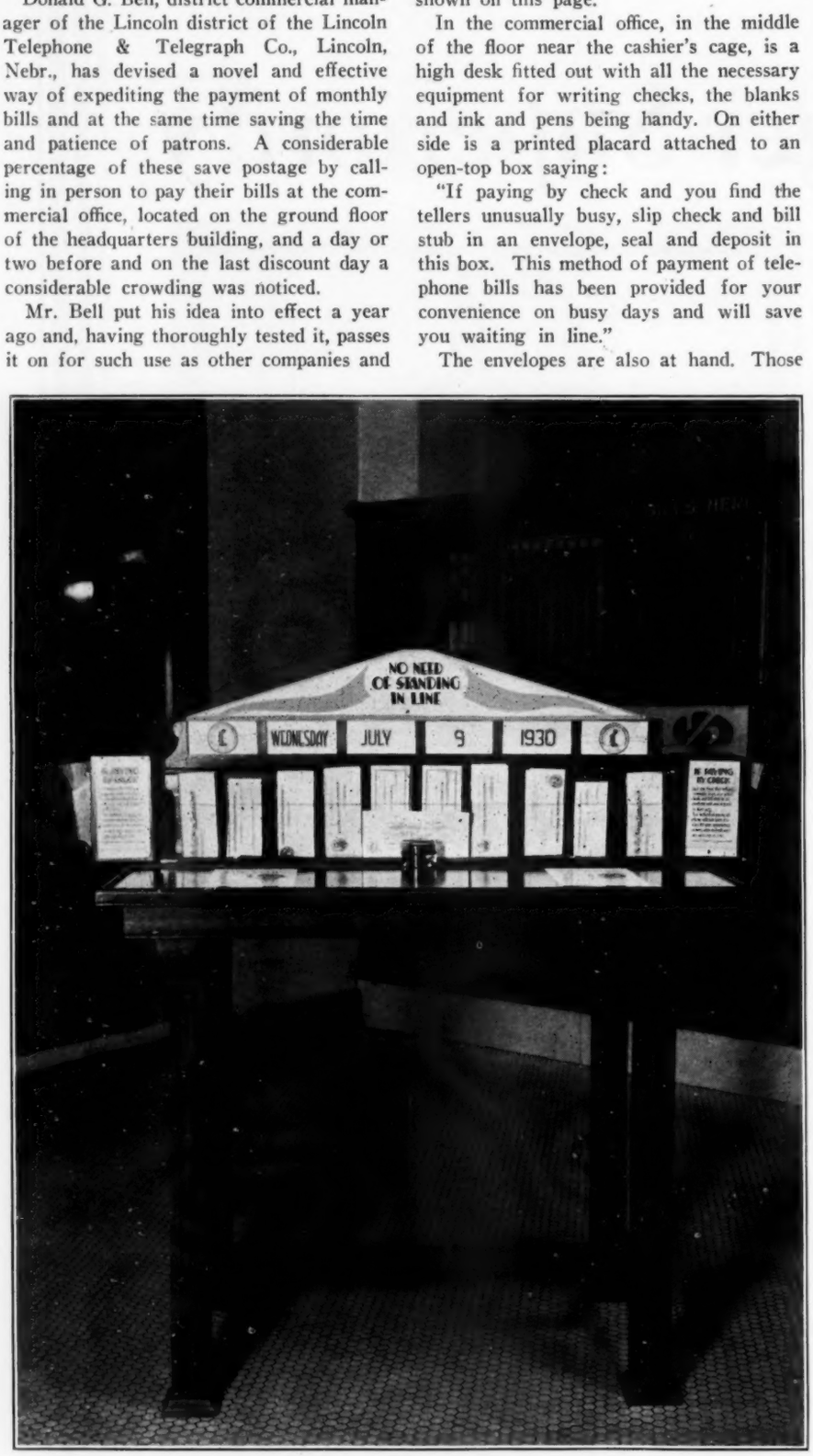
Donald G. Bell, district commercial manager of the Lincoln district of the Lincoln Telephone & Telegraph Co., Lincoln, Nebr., has devised a novel and effective way of expediting the payment of monthly bills and at the same time saving the time and patience of patrons. A considerable percentage of these save postage by calling in person to pay their bills at the commercial office, located on the ground floor of the headquarters building, and a day or two before and on the last discount day a considerable crowding was noticed.

Mr. Bell put his idea into effect a year ago and, having thoroughly tested it, passes it on for such use as other companies and managers may wish to make of it. The story is largely told in the photograph shown on this page.

In the commercial office, in the middle of the floor near the cashier's cage, is a high desk fitted out with all the necessary equipment for writing checks, the blanks and ink and pens being handy. On either side is a printed placard attached to an open-top box saying:

"If paying by check and you find the tellers unusually busy, slip check and bill stub in an envelope, seal and deposit in this box. This method of payment of telephone bills has been provided for your convenience on busy days and will save you waiting in line."

The envelopes are also at hand. Those deposited are taken from the box at intervals during the day, opened and the stamped and dated bill stubs mailed to the patron. The two busiest days are the ninth and tenth of the month. While the people were slow in taking advantage of the opportunity at first, now as many as 400 a month pay their bills in this convenient way.



Desk Arrangement for Use of Patrons of Lincoln Telephone & Telegraph Co., Lincoln, Neb., Who Pay Bills at Office. Note Boxes on Ends of Desk in Which to Deposit Checks and Bill Stubs.

Carbon Blocks of Station Protector Act As Transmitter.

A. E. Wall, plant man of the British Columbia Telephone Co., Vancouver, B. C., Can., declares this was the queerest telephone trouble case he ever encountered:

A permanent signal showed on the Bayview switchboard. The line involved was for two-party service, but one of the subscribers had moved and his telephone had been taken out. Mr. Wall was sent to investigate the trouble.

He climbed a telephone pole, listened in at the terminal box; and to his surprise heard a series of thumps, a buzzing noise like a saw in action, and the sound of voices coming over the wires from the supposedly unoccupied house a block away.

His arrival at the house resulted in a partial explanation. A gang of men were doing renovation work within. They were responsible for the noises—but how had he heard them over the telephone wires when there was no telephone in the place? Well, the house was wired for telephone service, he knew, so he decided to investigate further.

Descending to the basement and examining the "protector," he completely solved the mystery. Vibration from the work in progress in the house was jiggling the carbon blocks in the protector and causing them to act as a transmitter. The effect was the same as though a receiver was off the hook; it permitted the transmission of the noise and caused the permanent signal on the switchboard. Mr. Wall eliminated the trouble by removing the carbon blocks.

Private Branch Exchange Installations and Their Importance.

By J. R. Spivey,
Wire Chief, Ashland Home Telephone Co., Ashland, Ky.

The development of P. B. X. installations has become of much importance in the last few years and there are few companies that have not increased their revenue in this field. As a source of revenue, there is no better investment than the rental of P. B. X. equipment, and the alert manager has been quick to see the advantage of promoting this class of service.

With the placing of this type of service, there are several things to consider, which

if given a little forethought can keep down the expense of both initial cost and maintenance and at the same time give a higher degree of service to the customer.

Among the major things to consider is the lay-out of the system on the subscriber's premises, the furnishing of battery and ringing current to the switchboard and the station wiring.

The installation should be done in a manner that will take into consideration both changes and growth. It should not be done in a slipshod or haphazard manner, but should be planned and executed by a competent person. The writer has seen installations where the station wiring was brought into the switchboard, with no apparent thought of future change or growth, and at the same time causing a confusing and complicated "mess," which naturally gives trouble.

On the other hand a well-planned installation with the proper cabling, terminals, etc., properly installed, causes no trouble and can be added to or changed at will; in fact, a little more time and thought given to the initial installation. more than justifies itself.

In regard to battery supply, I am thoroughly convinced that in the majority of cases the furnishing of battery from the main central office is the best way to serve the average P. B. X. The reasons for this conclusion are:

First, in most cases P. B. X. systems are nearly always in the business section, where the cable pair facilities are plentiful. Second, the elimination of the attention of isolated batteries and charging devices. Third, the constant E. M. F. of power, when furnished from the main battery. Fourth, the entire absence of batteries and rectifier from the subscriber's premises, with the saving of space to the customer and the attachment of the rectifier to his lighting circuits.

The feeding of battery from the main battery should be from a fuse panel for this purpose, with an individual fuse for each switchboard and the use of a distinguishing jumper from it to the cable pairs. The most convenient way is to have a No. 19 gauge cable from the panel to a special block on the main frame for this purpose, using metallic feeds to the P. B. X., thus eliminating undue noise which is more or less present when a ground feed is used.

The furnishing of power ringing should be provided in the same manner, using a lamp panel for this and separate 15-watt lamps for each switchboard, or, in the case of small cordless type boards, two can be handled from one lamp satisfactorily.

In offices using frequency converters of the pole-changer type, it is not advisable to use this type of power ringing, except for emergency ringing, as a "saw tooth" type wave is sent out, which will "noise up" a cable to some extent. A much better arrangement is to have a separate motor-magneto machine to run off of power or lighting circuits.

A key can be used to throw over to the 16-cycle pole-changer at times of failure, but a better way is to have a relay control to take care of this automatically. This will give constant power ringing, even when there is no attendant in the central office.

In all cases when possible, the installation of the P. B. X. wiring should be in conduit, which the customer will gladly have installed if it is explained to him and the installation is of any size. When the customer agrees to install a conduit system, it is the duty of the telephone company to have the system laid out on plans, or furnish to the people doing the job definite instructions as to how it should be done, keeping the cost to the customer within reason. I have yet to meet a P. B. X. prospect who would not cooperate with the company when the importance of a proper installation is explained to him.

An important point, after the installation, is the proper instruction of the operator. In most cases she is a girl in the office who has never seen a switchboard before, and her first impression is that it is a very complicated mechanism. The instructor must be patient and diplomatic, for at the start a new operator will have a great deal to do with keeping the customer sold on the merits of the P. B. X.

If the few points brought out here are followed, it will be found that a change of worn cords, a new lamp now and then, a monthly polishing of plugs and an inspection will be the only maintenance needed on the average P. B. X.

Last of all let me impress on the reader of this article to have a routine for cleaning and inspection; keep a record of it and follow it. It will pay!

SAFETY DOCTRINES.

By JOHN A. BRACKEN.

SUCCESS.

Success in preventing accidents in plant work is principally a matter of perseverance in following safe methods.

The safe course is the best.

Insane Man Builds Telephone Line in Brazil; Wrong Direction.

The New York Times recently published a dispatch from Sao Paulo, Brazil, telling of the building of an unauthorized telephone line. Joao Figo, insane and penniless, built ten miles of the line before he was seized by police just as he was starting to build another line.

Joao Figo—which is plain John Fig when translated into English—had been employed by the local telephone company as a lineman and was discharged on June 1. The reason given on the record card for his dismissal was "a little weak for the work required."

Joao, unable to understand clearly that he was fired, bought himself a large enamel badge like those used by the company's construction foremen and proceeded to Bauru, a town of a few thousand near Sao Paulo, where he had heard the company had contemplated installing a line.

Arriving there he formally advised the mayor and other officials of his intentions, and was given permission to construct the line. Collecting a gang of 30 men, borrowing tools and tents and other equipment, he established camps, cleared a right-of-way through the jungle and erected poles, devoting ten days to the task.

Furnishing food to his gang of workmen did not bother Joao, as he charged everything, and the merchants did not question the telephone company's excellent credit. The first inkling of his operations came to the notice of telephone officials in Sao Paulo when Joao sent a man to the company's stores for tools. Policemen were sent to the camp but Joao had disappeared.

No trace of him was found for several days, when the telephone company agent in another town telephoned Sao Paulo asking for instructions about a gang of 20 men who were about to build a hitherto unheard-of line. The agent wanted to know what authority Foreman Figo had, because he had given a complaining subscriber there a three months' rebate on his telephone bill. Figo, when taken by the police, accounted for his actions by saying: "Well, I had to work."

Company officials say Joao's work was done unusually well, but they are unable to use the line because it runs opposite to the direction which they intended.

Bell Telephone Magazine Cover O. Kd. Over Television Circuit.

When the demonstration of two-way television was taking place in April, the editor of Long Lines Magazine, the magazine of the long lines department of the American Telephone & Telegraph Co., was at the Bell Telephone Laboratories in New York City while the publicity manager was two miles away in the headquarters building.

Taking up a large sheet of paper, the editor moved it within range of the square aperture before him and inquired: "How would this do as a cover for the next issue of the magazine?"

The publicity manager leaned forward to study the image appearing in the frame at the end of the circuit. "Why, I think that'll make a very good cover," he pronounced at length.

"You are sure you see it clearly?" inquired the editor.

"If I had a pencil, I'd draw you a sketch of it!" returned the other.

And that is how the cover for the May issue of Long Lines was approved.

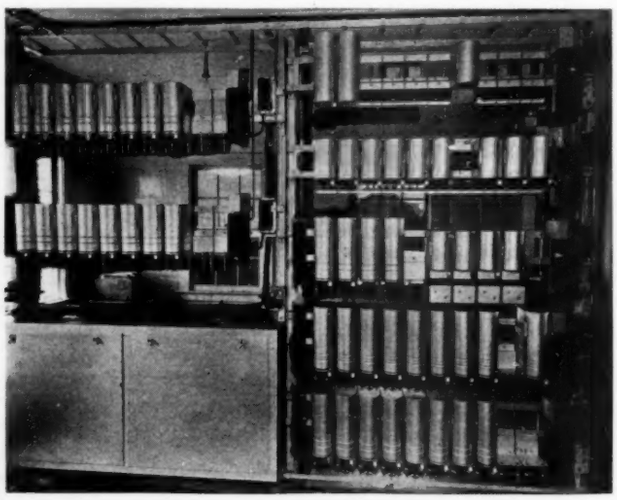
Interesting Automatic Operating Network

Unattended Strowger Dial Exchange of 100 Lines Provides Weekapaugh, R. I. Modern Service—Calls Can Be Dialed to Nearby Town of Watch Hill, Also Under Automatic Operation—Views of New Exchange Building and Equipment

By J. H. Stratton,
Manager, Boston Sales Office, Automatic Electric Inc.

The Westerly Automatic Telephone Co., with headquarters in Westerly, R. I., is numbered among the pioneer users of dial telephone equipment, the Westerly exchange having been first placed on an automatic basis in 1901 and Watch Hill having been added at a later date. The recent installation of automatic equipment at Weekapaugh has now added a third exchange to the original two.

An attractive new building was erected by the telephone company for the new exchange. Designed to resemble a small bungalow, it is set back from the street and surrounded with a well-kept lawn. The floor space of the building is sufficient not only for the present installation of 100 lines of Strowger automatic dial equipment, but will accommodate considerable additional apparatus when growth in demand for telephone service necessitates expansion.



New Unattended Strowger Dial Exchange Building of the Westerly Automatic Telephone Co., at Weekapaugh, R. I.—View of the Strowger Automatic Dial Equipment at Weekapaugh.

Plunger-type self-aligning line switches are used, with no secondary line switches at present included in the switch train. Five-frequency harmonic ringing is used, which allows as many as ten parties to be placed on one party line. The ringing sets are provided in duplicate, and the ringing load can be switched from one set to the other by remote control from Westerly.

Since the exchange is to be operated on an unattended basis, all special services such as toll, information, etc., are handled from Westerly, which is the toll operating center. There are three outgoing toll trunks to Westerly, terminating there on toll operator's positions.

The supervisory alarms are extended to Westerly over the last choice of these three toll trunks; and when all three trunks are in use these alarms will not cut in on a trunk until one becomes idle. The alarms indicate the condition of the exchange at Weekapaugh so that any difficulty which might develop can be remedied before it interferes with the telephone service.

There are four incoming toll trunks from Westerly, which terminate on toll connectors. The toll operator at Westerly desiring a party at Weekapaugh dials in directly over one of these toll trunks. The toll connector she seizes gives her direct access and precedence over a local call, so that she can interrupt a conversation if the desired line should be busy.

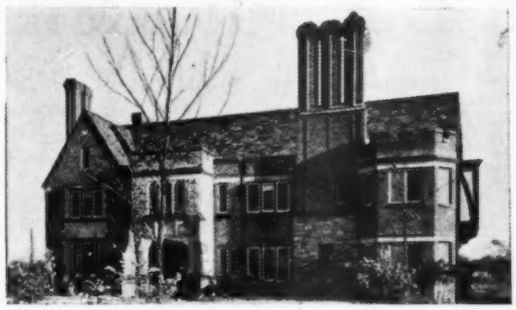
Besides these incoming and outgoing toll trunks to Westerly, there are also provided six two-way dialing trunks. Individual lines at Weekapaugh are metered for calls to Westerly, while subscribers on party lines making such calls are recorded by the toll operator, since there is a small charge for service between these two towns. To Watch Hill, which is also Strowger automatic, four two-way dialing trunks are provided, and free service is in effect for both individual lines and party line calls.

The power for operating the exchange equipment and maintaining the storage batteries in a charged condition is furnished by two six-ampere rectifiers. The power circuit is arranged for full floating operation, and the rectifiers are automatically controlled by the usual high-low voltage relay arrangement.

The installation of Strowger dial equipment at Weekapaugh forms, with the two dial exchanges of Westerly and Watch Hill, an interesting operating network. With toll operation being centered at Westerly, and other services such as information, complaint, etc., being handled there, the time of the operators employed there is utilized to high efficiency.

The unattended dial exchange at Weekapaugh is a typical example of the modern way of putting the small exchange on a paying basis, at the same time giving residents of such communities the highest type of telephone service. The inter-dialing features between the three towns also indicates the flexibility of such arrangements, and the possibilities of closer communication facilities between such adjacent communities. The arrangement is worthy of careful study by telephone executives confronted with similar situations, and desirous of placing their smaller localities on a more profitable basis.

Many telephone operating organizations are favorably inclined to this scheme for the future operation of all of their small exchanges, and are converting them to dial working as rapidly as conditions permit.



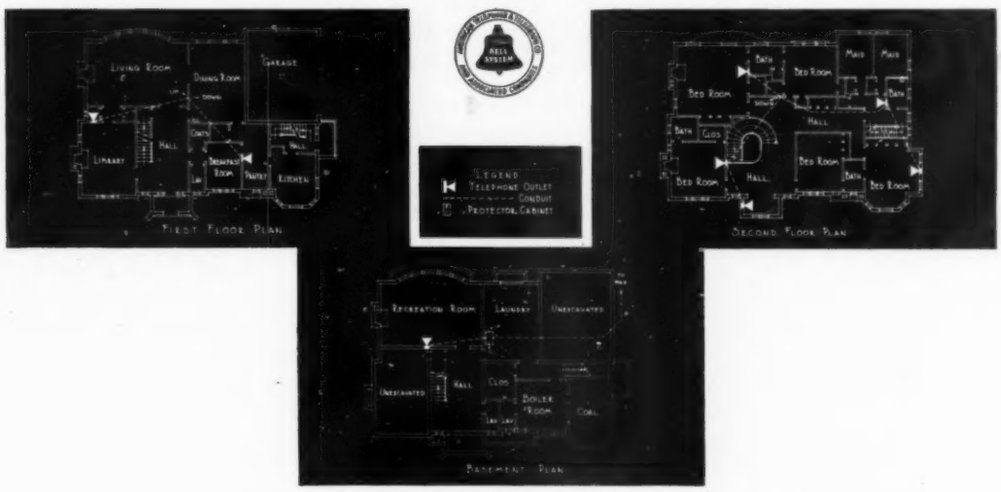
In the residence of Mr. Percy N. Calvert, 18040 South Woodland Road, Shaker Heights, Cleveland, Ohio, eight telephone outlets provide for modern telephone convenience. Here the telephone wiring is carried in conduit built into the walls and floors. MONROE E. DEANE, Architect. THE H. W. BROWN & SON COMPANY, Builders, *Cleveland.*

Flexibility is always Desirable in the Telephone arrangements of a Residence

IN PLANNING for the telephone arrangements of the houses they design, many architects include provision for more telephone outlets than the home owner may immediately require. This foresight insures a flexibility of service that often proves very desirable. When a residence is first occupied, telephones are needed in certain rooms. A change in the use of these or other rooms may involve the shifting of the telephone arrangements, and with outlets available at convenient locations, this rearrangement or expansion is easily accomplished.

Appropriate locations for telephone outlets can be determined in conjunction with the home owner, the architect and a representative of the local Bell Company. Conduit for the telephone wiring is then specified, and built into the walls and floors during construction. This results in improved appearance, and guards against certain types of service interruptions.

You and your clients are most cordially invited to consult with representatives of the local Bell Company in planning for the telephone arrangements for new and remodeled houses. No charge is made. Just call the Business Office.



This advertisement stresses the advantage of considering future service as well as present, in planning for the telephone arrangements of new and remodeled residences. It appears in magazines edited for architects.

Rural Line Development in Oklahoma

Telephone Necessary in Progressive Farming; 45 Per Cent of Population in Oklahoma on Farms—Much Effort and Expense Now Being Given to Rural Development—Address Given at Oklahoma Utilities Association Convention

By R. J. Benzel,

General Manager, Southwestern Bell Telephone Co., Oklahoma City, Okla.

In Oklahoma over one million people, about 45 per cent of the state's population, live on farms. This farming population is the most important element of the population of our state and receives the poorest telephone service. Not only are the telephones relatively infrequent—there being only 68,000 farm telephones in the state—but satisfactory service is certainly the exception rather than the rule.

This condition does not seem to be peculiar to Oklahoma, but rather quite general over the entire country. The question of rural telephone service has been a subject for considerable discussion in all conventions of telephone people held in the last year. It seems that the telephone companies are beginning to realize their responsibility to the farmer and are taking constructive steps toward furnishing him with better telephone service.

It would seem that the farmer, due to his relative distance from cities and towns, is considerably more in need of good telephone service than the average urban resident. It is interesting that in Oklahoma there are less than seven telephones per hundred farm population, while there are 20 city telephones for every hundred of city population.

That the telephone is necessary in progressive farming is evident from the increased use of the service on the part of the farmers who have been furnished satisfactory telephone service. Such farmers keep constantly in touch with the markets for their products, and in this way alone have made the telephone more than pay.

The great part of these 68,000 telephones on farms in Oklahoma are owned and maintained by the farmers. There are so many telephones on the average line that satisfactory service would be impossible, even if the physical condition of the lines were such as to permit of it. Most of the lines are grounded, with rusty wire and frequent splices; the instruments are antiquated, and usually the batteries are run down. The farmers pay an average rate of less than 50 cents monthly to the telephone company for switching service.

I think we can conclude from our experience with this problem that the farmer, however good a farmer he may be, is not properly trained in telephone work, nor does he have the time to maintain the telephone lines that serve him.

As previously stated a small portion of the farm telephones in the state is furnished, owned and maintained by the telephone companies. The average rate charged for this service is $1.50 per month; and this rate has existed since long before the world war.

Based upon the present purchasing power of the dollar, this rate is equivalent to

"The Rural Telephone Service," Says Mr. Benzel, "Is Now the Weakest Link in the Chain of Universal Telephone Service, and Everyone in the Telephone Business Should Be Extremely Interested in Strengthening This Link."

87 cents today. The company-owned rural lines have, at this rate, been a financial loss. The revenue derived therefrom has not even approached the cost of furnishing the service; and the companies have, naturally, been reluctant to develop it further.

For many years we have tried, through farmer line meetings and actual demonstrations, to educate the farmer to handle his telephone business properly. Although considerable may have been accomplished in isolated cases, the general condition of the service lines in Oklahoma still remains unsatisfactory. We have finally been led to the conclusion that the farmer cannot be made a telephone man; and if he is to receive adequate, satisfactory and dependable telephone service, the telephone companies must furnish, own and maintain the entire line and equipment.

Recognizing this, the telephone companies have made what I think to be the first really intelligent approach to the rural telephone service problem. This approach involved the determination of the following:

(1) What type of rural plant is most economical to build for this service that will meet the transmission requirements and mechanically resist storm loads and other causes of line failure without excessive maintenance costs?

(2) What is the most desirable maximum number of subscribers per line, considering the cost of construction, the quality of service needed and the traffic load?

(3) What rates will be necessary to permit of development of this service without burdening the companies or the subscribers?

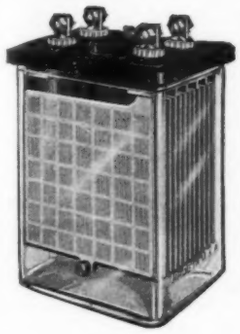
My company has done a great deal of work on this problem during the last year, and we have constructed a number of experimental lines. We have found that the solution of the problem is possible only through the application of telephone salesmanship; and with something definite to offer the farmer, we are proceeding at once on a very extensive rural development program. The service features of our proposed lines will be generally as follows:

They will be magneto metallic circuits designed to give satisfactory transmission on both local and toll calls; bridged or code ringing will be used generally, and there will be no less than six, nor more than eight subscribers on a line. The lines and equipment will be maintained on the same schedule as our exchange stations, insofar as practicable.

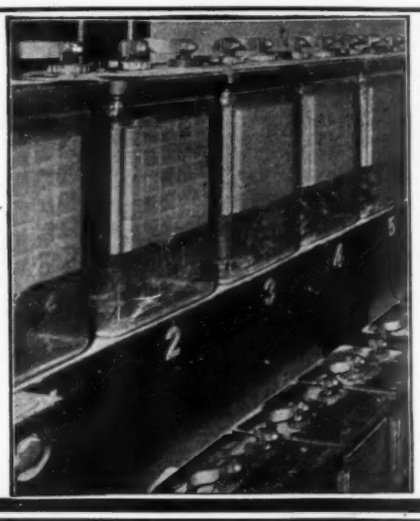
To furnish the farmer with this greatly improved service, a rate treatment somewhat different from the present $1.50 rate must be employed.

We are convinced that rural lines adjacent to the average or smaller-sized towns can be made to pay a satisfactory return if a density of from three to four subscribers per pole mile can be obtained, and a monthly base rate of $2 for residence and $3 for business for all stations, within two miles of the initial rate area.

Due to the decreasing number of stations per pole mile, and the increased investment in plant, there must be added 25 cents per mile per month to the base rates for stations beyond this initial area. In the average case, these rates will not earn a fair return on the investment but they will cover the other costs of furnishing the service, and we expect future development to bring the average revenue high enough to pay a fair return.



Cell of Exide Battery Chloride type, 480 amp. hr. capacity, used in Telephone service.



QUALITY . . . Dependability . . . Adaptability . . . Economy . . . Let those four points govern your purchase of telephone batteries. Exides meet those four important requirements.

(1) *Exide Quality* is the result of over thirty-five years' experience in building storage batteries for use in every kind of telephone work.

(2) *Exide Dependability* and long life result from their unusual design and rugged construction.

When You Buy A Telephone Battery Look For These Four Important Points

For a long life of dependable service, there is no better battery than the Exide Battery, Chloride type; it requires very little attention and is an ideal source of power for telephone service.

Exide
BATTERIES

(3) *Exide Adaptability.* There is an Exide Battery that can be especially adapted to every telephone need.

(4) *Exide Economy.* The first cost of an Exide Telephone Battery is moderate. The operating and maintenance costs are low.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE

Crapo
GALVANIZED PRODUCTS

Telephone and Telegraph Wire
Extra Best Best (EBB)
Best Best (BB)
Steel

Seven Wire Steel Strand
Standard
Siemens-Martin
High Strength
Extra High Strength

Crapo Galvanized Products combine *every* element essential to long life and low maintenance cost: pure zinc coatings, *non-cracking, non-peeling*—correct tensile values—proper ductility.

Immediate shipping service from Distributors' stocks in all jobbing centers.

Manufactured Exclusively by
Indiana Steel & Wire Co.
Muncie, Indiana

TELERING

For Central Office and PBX Ringing
IN USE ALL OVER THE WORLD

ONE REED!

ONE CONTACT!

IDEAL WAVE FORM

REDUCE YOUR RINGING COST

ORDER ONE ON TRIAL

More power than you need.
IT PAYS FOR ITSELF

Converts 60 Cycle Lighting Current to 20 Cycle Ringing Current

POSITIVELY NO RADIO INTERFERENCE

Very low current consumption.

Price $44.00 — F. O. B. Elyria
Fully Guaranteed.

Sold by Leading Telephone Distributors

TELKOR, INC., ELYRIA, OHIO

(Write for booklet)

We have definite plans to proceed with rural development and have appropriated $200,000 for this purpose during this year. Starting late in 1929 we had approximately 200 stations on this new rural basis by the end of the year, and we expect to add during 1930, 1,200 to 1,500 more.

The rural telephone service is now the weakest link in the chain of universal telephone service, and every one in the telephone business should be extremely interested in strengthening this link. We find that those living in cities are generally interested in this rural development problem, for they realize that better telephone service to the farmer brings him closer to town.

We know that the average farmer is not now making the use of out-of-town toll service that he should, due to the impossibility of carrying on a satisfactory conversation. We are finding that the farmer generally has not yet realized that the quality of his present service is consistent with the present cost, and that service of a quality that he needs to run his business of farming must involve a slightly greater expense.

As previously mentioned, the rural problem seems to us entirely one of salesmanship. The resistance offered by the farmer who has become accustomed to an inferior grade of service, although he has automobile, radio, electric power, farm machinery, etc., is sometimes very great; and real selling ability is necessary to show him where the increased cost of telephone service is justified.

However, the existence of the radios, automobiles, power machinery, etc., on the farms indicate the change that has been coming about in the farmer's economic and social life. The experience of light companies which have carried out very successfully programs of farm electrification is very encouraging.

They have through splendid salesmanship made the farmer realize that electric power would be worth more to him than its cost, even when this cost often meant a substantial outlay of money for line construction charges and a guarantee of monthly power consumption considerably greater than the amounts we are asking for telephone service.

On the whole, while our rural development and sales work are costing us considerable effort and expense at this time, we believe that within five years, as its value becomes known and appreciated, this service will sell itself.

By that time the Oklahoma farmer generally will be receiving the same quality of telephone service that is being furnished in the cities; and he will be making such profitable use of this service in the business of running his farm that he will be gladly paying his share of the cost of operating the telephone property.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Announces Acceptance of Commission's Order.

Carl H. Mote, of Indianapolis, president of the Northern Indiana Telephone Co., with headquarters in North Manchester, Ind., has issued a statement to subscribers of the company announcing that it will accept the decision of the Indiana Public Service Commission and not go to federal court in an effort to obtain a rate increase for its 15 exchanges.

The commission on July 11 refused to grant higher rates to the company.

In addition, Mr. Mote stated that the company, for a reasonable time, would place telephones in the homes of all who desire such service, without the customary installation charge of $3.

It was reported that the action was being taken in an effort to regain more than 1,000 subscribers who had their telephones removed when the company increased its rates last year.

Hearing on Indiana Company Increase Continued to September.

The hearing on the rate increase petition of the Johnson County Telephone Co., Franklin, Ind., will be concluded September 8, it was announced at the conclusion of the preliminary hearing on July 29. The company operates exchanges at Franklin, Bargersville, Ninevah, Trafalgar and Whiteland in Johnson county and Marietta in Shelby county. It is seeking rate increases averaging 30 per cent and varying from 12½ per cent on rural telephones to 50 per cent on all business telephones.

The Indiana Public Service Commission's engineers value the property at $298,000 for rate-making purposes, while the engineer for the telephone company values the plant at $453,000. Commissioner Frank T. Singleton, in charge of the hearing, instructed the officers of the company to introduce in evidence the price paid for the property as an evidence of the value of the plant.

The adjourned hearing was allowed to give the opposition to the rate increase an opportunity to make a thorough study of the company's appraisal.

Candidates for Nomination for Nebraska State Commission.

Hugh H. Drake, secretary of the Nebraska State Railway Commission for the last 20 months, has filed with the secretary of state for the Republican nomination at the primary this month, Commissioner Curtiss having announced that he will enter private business life at the end of his term. Mr. Drake has made a very acceptable secretary, and will enter the race as one of the leading candidates, with the support of Mr. Curtiss and Commissioner Randall.

He is an attorney by profession, and served four years as county attorney at his home town of Kearney. W. E. Sanford, coal dealer of Lincoln, who was defeated two years ago in the primary by Mr. Curtiss, and George A. Wilkins of Omaha, former state senator and an accountant by profession, have also filed.

Two Democratic editors, Irl D. Tolen of Ord and E. A. Walrath of Osceola, have filed. Both made unsuccessful races in past years. Mr. Tolen is out on a platform declaring that "honest capital, honestly invested in a public utility and honestly managed, is entitled to a fair return, but invested capital should be compelled to assume in some proportion the risks that must be assumed by that great industry, agriculture, and by the comparatively small business man, who have no guaranty of a fair return on their capital."

The courts have held repeatedly that where the state limits the returns of capital, it must guaranty a fair return, but Mr. Tolen is not the first commissioner in Nebraska, if he should be elected, to find out after he got into office that he had to choose between back-tracking on similar campaign declarations or plunging the utilities into rate cases, the expenses of which were later reflected in higher rates.

Bell Authorized to Acquire Small New Jersey Property.

The Interstate Commerce Commission recently approved the acquisition of the properties of the Vincentown & Tabernacle Telephone Co., of Vincentown, N. J., by the New Jersey Bell Telephone Co.

The Vincentown company owns and operates an exchange at Vincentown, Burlington county, which serves approximately 190 subscriber stations. There are no toll lines. The New Jersey Bell company does not maintain an exchange at Vincentown, but its toll lines connect with the

Indestructible! —Adjustable! —Sectional! Forms For Concrete Manhole Construction

Universal manhole form partially set up showing construction.

Penote "Universal" Patented Forms

THE Penote Universal Form is especially designed to meet telephone companies' requirements. A specialized construction gives it a degree of superiority in the construction of manholes which is quickly recognized.

In designing this form particular attention was given to A. T. & T. Company's standardization policy which requires comparatively few variations in manhole sizes. Therefore this form is composed of but one set of sections adjustable to meet these requirements, thus the necessity of "piecing out," with additional sections, is practically eliminated.

Penote Sectional Steel Manhole Forms are practically indestructible, easily and quickly set up in the excavation and removed from the finished manhole. With them manholes are poured complete in one operation. They offer splendid advantages for use in loose and fluid soils and are inexpensive, paying for themselves after use on but a few manholes.

Write for further information, full description and specifications of the types of manholes that can be constructed with one set of sections.

THE CLEVELAND TRENCHER COMPANY
20100 St. Clair Avenue
Cleveland, Ohio

Vincentown company's exchange. No duplication of facilities is involved.

The New Jersey Bell company proposes to purchase the Vincentown company's properties for $25,000, payable in cash. An appraisal of the properties made by the Bell company's inventory and costs engineer finds the cost of reproduction to be $53,801, and less depreciation, $40,403. None of the property will be retired from service as useless.

In 1929, operating revenues and expenses of the Vincentown company were $6,834.71 and $7,500.98, respectively, showing a net loss of $666.27. The company has outstanding $7,000 of capital stock, $2,000 of bonds, and $1,000 of notes. It is understood that the bonds are to be paid in full on or prior to the date fixed for the sale of the properties. No immediate change in rates is contemplated, but when the service has been brought up to the Bell company's standards, a new rate schedule will be proposed.

Vincentown is located about 20 miles east of Camden, N. J., and has a population of 1,000. Telephone service in the territory has been unsatisfactory for some time, and as the population is growing, there is an increasing demand for local and toll service which requires additions to plant, and improvement in central office equipment, as well as the outside plant.

The present owners do not desire to make the expenditures necessary to meet these requirements, therefore the New Jersey Bell company plans to put into effect a comprehensive plan for improving operating conditions in the Vincentown district, and is prepared to make the expenditures necessary to provide the service demanded. At the hearing, communications from a number of representative telephone users were introduced into evidence, all favoring the proposed transfer of properties.

A certificate has been issued by the New Jersey Public Utility Commission authorizing the proposed acquisition.

Revision of New York Intrastate Toll Rates Promised.

The New York Telephone Co. has in process a rate revision table for intrastate toll charges which will be submitted to the New York Public Service Commission September 1, according to an oral statement by Chairman Milo R. Maltbie on August 1, announcing that the scheduled investigation recently ordered by the commission has been postponed until September 3.

The investigation was ordered, according to the commission's announcement, because of the receipt of complaints that the New York company's intrastate toll rates are higher than the interstate rates of the American Telephone & Telegraph Co. for comparable distances.

Upon receipt of information that the

(*Please turn to page 39.*)

Be a supporter—mention TELEPHONY.

PATENTS PATENTS

Dividends on Expense

The cost of current for your stations is probably one-tenth for Batteries and nine-tenths for replacement labor.

Lengthen the replacement periods and the big end of the expense is reduced.

Storm King Batteries were designed by engineers specifically for Telephone Service. They embody patented improvements that definitely lengthen life. They are made in the most modern Battery plant in the world. That reduces selling prices by reducing costs, and gives you the two advantages of less expense for the Battery and much less for replacements.

The lengthened life pays dividends on the expense.

GENERAL DRY BATTERIES
INCORPORATED
CLEVELAND, O.

Makers of all types of dependable Dry Batteries for Radio, Ignition, Flashlight and General Use.

Stromberg-Carlson's Six-Months' Sales

Report Given Out by Vice-President Scoville Shows Company Continuing Record Sales—First Six Months of 1930 Increased 30 Per Cent Over Last Year Which Was Company's Best Year—Some Historical Data of Company

While 1929 was the banner business year in the history of the Stromberg-Carlson Telephone Mfg. Co. of Rochester, N. Y., the first six months of 1930 show an increase of 30 per cent over the corresponding period last year, according to a report given out by George A. Scoville, vice-president in charge of sales.

In spite of the Wall Street market drop last October and the so-called general business depression which has followed that drop, Stromberg-Carlson is employing more men and women today than at any time in its history, says Mr. Scoville. The company now has 2,000 in its employ. It is continuing its record sales and there has been no let-down in sales expansion, manufacturing or advertising.

These business records are due, in Mr. Scoville's opinion, to Stromberg-Carlson's quality telephone and radio merchandise and its conservative merchandising system.

Stromberg-Carlson has always been a manufacturer of quality products. For 36 years that company has made high-grade telephone apparatus, and in 1915 began manufacturing quality radio head sets and loudspeakers.

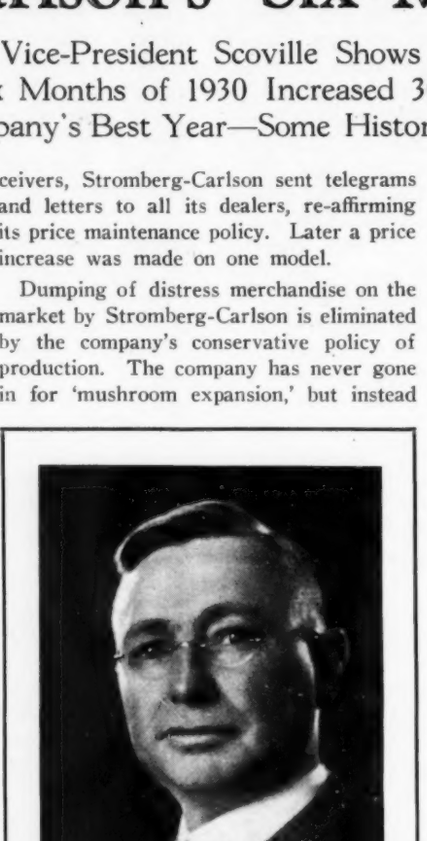
In 1924, when it made its first radio receiver, telephone methods of manufacture, which required quality products, were applied in the designing and in the making of radio receivers, and these methods have made for the success of Stromberg-Carlson receiving sets.

Stromberg-Carlsons were the first radio sets built in accordance with the telephone switchboard plan of assembly, which insures utmost rigidity and long life. That company was the first to employ total shielding, which greatly enhances the quality of radio tone. Numerous improvements in Stromberg-Carlson receivers are direct results of the company's long experience in building quality voice transmission and reception apparatus.

According to Mr. Scoville, Stromberg-Carlson operates on the most conservative merchandise program that can be drawn up. Three of the main features of the program are the guarantee not to reduce its prices, the policy of not over-producing and the system of selling direct from factory-to-dealer-to-consumer. Speaking of these features Mr. Scoville said:

"Stromberg-Carlson's guarantee to its dealers and consumers 'not to reduce its prices' is one of the keynotes to the success of the company. It was in October that this policy last startled the business world. After the stock market crashed, forcing many companies to announce reductions in the price of their radio receivers, Stromberg-Carlson sent telegrams and letters to all its dealers, re-affirming its price maintenance policy. Later a price increase was made on one model.

Dumping of distress merchandise on the market by Stromberg-Carlson is eliminated by the company's conservative policy of production. The company has never gone in for 'mushroom expansion,' but instead



Stromberg-Carlson, According to Mr. Scoville, Is Employing More Men and Women Today Than at Any Time in Its History.

builds each year only enough additional receivers to take care of the natural demand created by the word-of-mouth advertising resulting from the satisfaction enjoyed by a normally-increasing number of Stromberg-Carlson owners. As a result of this policy, the radio market is never flooded by a surplus of Stromberg-Carlson merchandise."

The radio dealer organization of the Stromberg-Carlson company is one of the most unique systems in business today, Mr. Scoville declared. Commenting on the "direct selling from factory-to-dealer-to-consumer," he said:

"There have been many distinct advantages resulting from Stromberg-Carlson's policy of selling direct to dealers. Dealers have enjoyed freedom from the evils of overcrowding, because of the care exercised by the company in its appointment and in the zoning of its territories. The Stromberg-Carlson franchise has always provided for the fullest possible development of trade areas on the part of retail merchants.

Under this system dealers enjoy a closer relationship with the factory, because of the frequency of their contacts with Stromberg-Carlson representatives.

Stromberg-Carlson officials believe that these policies give the buying public the fullest protection and insure the permanent investment value to the buyer at all times."

The growth of the Stromberg-Carlson company has been slow but steady, averaging an increase of 20 per cent per year for the past 15 years. The management employs the most conservative business policies but is always alert for taking advantage of new developments in both telephone and radio fields. The company has always tried to prevent speculation in its stock. It is controlled by its employes and their families.

The history of this organization dates back to the beginning of the Independent telephone movement in the United States. In the year 1894, just as the original basic telephone patents had expired, two men, Alfred Stromberg and Androv Carlson, formed a partnership in Chicago to build telephone apparatus. Carlson lived in Chicago until his death in 1925, but had not been connected with the company for some years.

Both men were natives of Sweden; Stromberg, who also was behind the Stromberg Carburetor Co. and the Stromberg Clock Co., which have no connection with the telephone manufacturing company, having come to this country with experience gained in the famous Ericcson telephone plants in his native land. After much difficulty, they succeeded in raising $500 apiece, which was immediately invested in the new venture, starting a little shop which prospered surprisingly.

One year later the Stromberg-Carlson Telephone Mfg. Co., an Illinois corporation with the same name as the present company, was formed. Unfortunately, the rosy promises of the first year failed to materialize and, as a result, the organization struggled through several years of uncertain operaton, during which it seemed impossible that it would survive. That it did continue must ever remain as a tribute to the ambition and steadfast determination of its founders.

Four years later, in 1899, their plant was full of business and they were awarded a contract by the Home Telephone Co. of Rochester, N. Y., predecessors of the Rochester Telephone Corp., for the first units of its switchboard. One year later Rochester capitalists, seeing the possibilities in the business, bought control of the Stromberg-Carlson Telephone Mfg. Co.

and moved the plant to Rochester and made it what it still is today—a Rochester-owned and managed institution.

Since its existence the Stromberg-Carlson company has supplied equipment for scores of farmer lines, small villages and towns, and has installed some of the largest switchboards in the world. It is considered one of the largest Independent telephone manufacturers today.

The company maintains branches in Chicago and in Kansas City. C. W. Schafer is Chicago division manager and in charge of the Chicago branch offices. A. J. Roberts is manager and C. D. Kinne, assistant manager, respectively, of the Kansas City branch.

The company owns the Stromberg-Carlson Telephone Mfg. Co. of Canada, Ltd., located at Toronto; controls the Stromberg-Carlson Telephone Mfg. Co. of Australia, situated at Sidney; controls the J. P. Stockton Phonograph Co. of Newark, N. J., which has just developed a unique, compact and efficient automatic record shifter for radio-phonograph combinations; and controls Bludworth, Inc., of New York City, makers of voice reinforcement systems and sound reproducing systems with full remote control for churches, public rooms, hotels and large homes and estates.

The officers of the company are: President, W. Roy McCanne; vice-president in charge of sales, George A. Scoville; vice-president and chief engineer, Ray H. Manson; vice-president in charge of production, Edward A. Hanover; vice-president and secretary, Wesley M. Angle.

Long Distance Telephone Service Expansion in Peru.

A long distance telephone service has been recently inaugurated in Peru. The name of the company operating this new service is Compania Nacional de Telefonos, and its head office is located at Calle Rifa No. 327, Lima. This company operates only the long distance calls outside of Lima and is completely independent from the services operated by the Compania Peruana de Telefonos, which in 1929 was acquired by the International Telephone & Telegraph Corp. There is an arrangement, however, between the two companies which enables callers to use the apparatus and centrals of the Compania Peruana when requiring a long distance call.

The long distance telephone service between Lima and Chincha has been in operation since February, 1930. A short time after that it was extended to Pisco, Ica, Canete, Huaral, and La Oroya. The new company expects within a few weeks' time to extend the service to Matucana, Huacho, Supe, Barranca and Pativilca. Chosica, which was formerly reached by the long distance service operated to that town by the Compania Peruana, is also served now by the new company.

From the Mail Bag.

In a letter to TELEPHONY, R. Phillip Hart, vice-president and manager of the Cazenovia Telephone Co., with headquarter at Cazenovia, N. Y., says:

"Your publication is read weekly by the writer with great pleasure, and also by our construction foreman and troublemen. We all consider TELEPHONY a very interesting and useful visitor."

Writing from Adrian, Mich., A. O. Lindle, long in the telephone business, sends the following:

"Please find attached my check for one year's subscription to TELEPHONY. I have been a subscriber to your paper for 15 years, until about 8 months ago when I dropped out. I find I need it, so please renew."

Fred Lewis, of the Inland Telephone Co., located at Piedmont, Mo., in a letter of inquiry, added the postscript: "I have found your journal a source of great help and pleasure."

The Compania Nacional de Telefonos del Peru was established in 1928, with capital (about $400,000) supplied by the Marconi Wireless Telegraph Co. The work of erecting cross country lines began early in 1929, and about 800 kilometers of lines have been constructed.

The tariff for this service has been based on the charge of one centavo per kilometer, with a small surcharge for shorter distances, but there is a special night service after 8 o'clock which is considerably cheaper.

There is also a system of strip-tickets which permits the use of the service with a reduction of about two-thirds of the usual tariff. The only restriction imposed upon the public using this service is that of making a previous arrangement with the company. This arrangement may consist of a deposit of a sum sufficient to cover the probable costs of the calls made during a period of one month, or a strip-ticket may be purchased for a fixed number of calls within a period of time duly accorded beforehand.

When arrangements of this nature are made with the company, the latter supplies a code which must be given when putting through a call. It is claimed that calls have increased 500 per cent within a period of two months.

The company maintains offices in Pisco, Chinca, Ica, Huacho and Chiclayo, besides the Lima office.

Increase in Telephone Use in Belgium in Two Years.

There are 66,000 more telephone users in Belgium today than there were two years ago, according to statistics recently published. In 1929 the calls totaled 201,000,000, against 158,000,000 in 1927.

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SINCE 1864

With the Manufacturers and Jobbers

New Condenser Provides Large Capacity in Limited Space.

One of the interesting developments of the year is a new electrolytic condenser, made by the Fansteel Products Co., Inc.,

The New Fansteel Electrolytic Condenser.

North Chicago, Ill. This condenser employs the odd metal, tantalum, which combines the properties of an electrolytic valve with an absolute inertness to chemical reagents.

The Fansteel condenser is claimed to possess more than the usual advantages of electrolytic condensers. In the first place, it is self-healing; in other words, an overload will break down the cell only momentarily, after which the cell will reform and continue to function normally. This makes the condenser practically indestructible.

The condenser provides much higher capacity per cubic inch of space than the usual paper condenser, and is declared to be absolutely free from hum. It consists of two plates of tantalum in an acid electrolyte. The condenser illustrated has a capacity of 800 mfd. at 24 volts, and is only slightly larger than a pint fruit jar. The condenser can be formed on either direct or alternating current at any voltage up to 150, and specially-constructed condensers may be furnished for higher voltages.

Compared with electrolytic condensers employing aluminum plates, the Fansteel condenser is claimed to be distinctly superior in that the plates never require replacements, as they are not corroded by the electrolyte. The dielectric film of the tantalum condenser, moreover, is not soluble in the electrolyte.

The tantalum condenser requires no attention except the very infrequent addition of water, and it cannot be worn out or destroyed by any ordinary electrical or chemical means. Its original cost per microfarad is said to be far less than that of paper condensers.

This type of condenser is standard in Fansteel battery chargers, types CM and CR, as part of the filter system which eliminates noise from talking circuits, making it possible to charge batteries while they operate. The condenser is also offered to industry for general purposes.

Bolivar, Mo., Installs Stromberg-Carlson Switchboard.

The directors of the Polk County Mutual Telephone Co. of Bolivar, Mo., who recently placed their order with the Stromberg-Carlson company for new central office equipment, advise the company that the new equipment is now installed and that their subscribers are enjoying the greatly improved service.

The new equipment consists of a standardized Stromberg-Carlson No. 105 switchboard equipped with 160 lines and complete with all new arrester equipment. Other improvements in the central office were also made at the time of the installation.

New Data Just Published on Matthews Guy Anchors.

Bulletin 803 has just been issued by the W. N. Matthews Corp., St. Louis, Mo., giving descriptive information and illustrations on Matthews Scrulix, Xpandix, and Traplox anchors.

Matthews Scrulix anchors are screw type and the pioneers of this type of anchor. The malleable iron anchor of the Scrulix type screws down deep and has great holding power. The Matthews Xpandix anchor is an expanding type of anchor which is economical to install and which will hold all that is ordinarily placed on an anchor. The Matthews Traplox anchor is a plate type of anchor which is easily installed because of the traplocking feature.

The bulletin gives up-to-date and complete information about Matthews guy anchors and how they will save money on a company's anchor requirements.

New Utility Tool Box Described in Littleford Bulletin.

Littleford all-steel tool boxes and lead furnaces are described and illustrated in recent bulletins. Included in the line of tool boxes is the utility box, No. T½. This is an entirely new box for splicers' use. It is made throughout of No. 18 gage steel.

A one-piece waterproof cover opens up from the curb side of the box. Under the cover are two large shelves half the size of the box. Below the shelves is the main storage section for such equipment as oil cans, paraffine pots, rolls of wire, picks, etc.

The right side of the box opens down, forming a convenient shelf for the workman. With the cover thrown back, and the side panel dropped down, the entire curb side of the box is open, and workmen can readily select tools and equipment. Just in front of the box and fastened to the chassis channel, is a convenient outside shelf which is amply strong to support a vise or other bench tools.

A built-in running gear has semi-elliptical springs, rubber-tired wheels, and roller bearings. A strong pulling eye is at the front of the channels forming the chassis and at the proper level to be attached to a motor truck.

Copies of these bulletins which also contain the descriptions of the other Littleford tool boxes and lead-melting furnaces may be obtained upon application to Littleford Bros., 457 E. Pearl St., Cincinnati, Ohio.

Circular Tells of New Trackson Trench Roller.

The new Trackson trench roller which eliminates hand tamping and puts back all of the dirt over newly-laid conduit and pipe is described in an attractive circular which may be obtained by writing the Trackson Co., 1318 So. First St., Milwaukee, Wis.

American Electric Switchboard for Weslasco, Texas, Exchange.

The Western Telephone Corp. announces the purchase of new central office equipment from American Electric Co., Inc., for its exchange at Weslasco, Texas.

The switchboard is to be a four-position monotype senior with a single calculagraph panel section and a cable-turning section. It will have a capacity of 1,200 lines with 400 local, 30 rural and 20 toll lines equipped. The toll and rural circuits will be of the improved lamp signal type. All cord circuits will be full universal arranged for five-party service.

The cabinet will be of Central American mahogany with extended-type keyshelf equipped with glass bulletin holders. Auxiliary equipment, including a wire chief's test desk and power apparatus, completes the order.

The Western Telephone Corp. together with affiliated companies has its headquarters at Salina, Kans., and operates more than 100 exchanges in the following states: Kansas, Texas, Missouri, Oklahoma.

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WHAT THE COMMISSIONS ARE DOING.

(*Continued from page 33.*)

company is preparing revised rates, Mr. Maltbie said, the hearing scheduled for August 1 was adjourned to give the commission an opportunity to make a comparison between the rates of the two companies.

File Complaint with Commission Regarding Poor Service.

Gus Haggstrom, Charles W. Hunter and Oscar Okeson, of Wolbach, have filed a complaint with the Nebraska State Railway Commission to the effect that the Wolbach Telephone Co. fails, neglects and refuses to furnish adequate service.

It is alleged that the company has neglected its pole lines so that in many cases the poles have been destroyed while others are so rotten that it is dangerous for linemen to climb them; that the company refuses and neglects to take care of rural lines with the result that wires are lying on the ground, running along wire fences or are attached to trees; that it refuses to furnish patrons with dry batteries and maintains an antiquated and inefficient switchboard.

I. C. C. Approves Transfer of Properties in Resort Area.

The Interstate Commerce Commission has approved the petition of the Bell Telephone Co. of Pennsylvania to acquire the properties of the Paupack Telephone Co., of Lake Ariel, Pa., for the sum of $40,000, payable in cash.

The Bell company owns and operates a telephone system throughout Pennsylvania, including Lackawanna, Wayne and Pike counties, and the Paupack company furnishes service in parts of these counties. The Paupack company owns four central offices, with switchboards, station apparatus, etc., and 50 miles of toll pole lines as well as 201 single miles of wire. The number of subscriber stations served by each exchange of the Paupack company are: Hamlin, 136; Lake Ariel, 208; Newfoundland, 118; and Wilsonville, 88; total number of stations, 550.

The lines of the Paupack company are connected with the Bell company's system for interchange of service, and there is no competition in telephone service in the territory served by the Paupack company, so that no duplication of facilities exists.

An appraisal of the Paupack company's properties made by the Bell company's general plant manager finds the cost of reproduction to be $98,474.11, and less depreciation, $42,865.51. The estimated value of the property to be retired from service is $2,036, with no salvage, and the cost of removing the retired property is estimated at $6,841.

In 1929, the Paupack company's operating revenues were $18,063.11, and the operating expenses were $16,020.80, leaving

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a net profit of $2,042.31. The company has outstanding $18,050 of capital stock, and funded debt amounting to $8,000. This indebtedness is to be paid by the Paupack company from the proceeds of the sale of its properties. No immediate change will be made in rates, but possibly at a later date a new schedule will be proposed.

The territory served by the Paupack company was largely agricultural until recently, when it has been developing into a summer resort section. This new development has created a demand for service which the Bell company can more easily render than the Paupack company.

The Paupack company's plant is not in condition to meet the increasing demands for service, and the present owners are not in a position to provide necessary improvements and extensions. The Bell company proposes to expend approximately $45,000 to put the plant in proper condition to serve the new territory being taken over.

A certificate was issued by the Pennsylvania Public Service Commission authorizing the proposed acquisition, and no objection to the granting of the application was presented at the hearing held by it.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION

July 17: Certificate issued approving the acquisition by the Bell Telephone Co. of Pennsylvania of the properties of the Paupack Telephone Co. of Lake Ariel, Pa.

July 18: Approval given the acquisition of the properties of the Serviss Telephone System, Pine Run, Mich., by the Michigan Bell Telephone Co.

July 18: Acquisition by the New Jersey Bell Telephone Co. of the properties of the Vincentown & Tabernacle Telephone Co., Vincentown, N. J., approved.

CALIFORNIA.

July 29: Los Gatos Telephone Co., of Los Gatos, filed application for authority to extend its service into adjoining territory on the south and east of its present exchange area.

ILLINOIS.

July 23: Case dismissed on a petition filed by the Geneseo Co-operative Telephone Co., of Geneseo. Directors of the company asked that the petition be withdrawn because consent of a majority of the board had not been secured before it was filed.

July 29: Order issued suspending until November 27 the proposed increased rates for desk-set telephone service in Compton, Earlville, Leland, Meridan, Somonauk, Paw Paw, and West Brooklyn, filed by the Illinois Commercial Telephone Co.

July 29: Order issued re-suspending until February 9, 1931, the proposed increase in rates for service in New Athens, St. Clair County, filed by the Southwestern Bell Telephone Co.

INDIANA.

July 22: The Northern Indiana Telephone Co., of North Manchester, has filed a petition asking permission to build a direct toll line between North Manchester and Warsaw. The company asks that it be allowed to build the line as far as its territory extends and that the company at Warsaw be allowed to build south to the extent of its territory to meet the line, if it desires.

At present, connection with Warsaw is indirect as the two competing companies go as far as possible over their own lines, and complete the connection through other exchanges.

MISSOURI.

July 11: Complaint of William E. Brown, against the North Missouri Telephone Co. and the Clinton County Telephone Co., of Plattsburg, dismissed.

July 11: Order issued approving application of Fred Williams to sell and D. A. Rice to purchase the Galena & Reeds Springs Telephone Co., of Galena.

July 11: Proposed new schedule of rates to be charged by Southwestern Bell Telephone Co. at its Hickman Mills exchange which serves Hickman Mills, Martin City, Grandview and Dallas, approved.

July 17: Proposed new schedule of rates to be charged by the Southwestern Bell Telephone Co. for exchange service at Bowling Green, approved.

July 17: Application of the Birch Tree Telephone Co., of Birch Tree, for an order authorizing the execution of note and deed of trust for purpose of paying off obligation and rehabilitation of system, approved.

July 18: Application of Pleasanton Telephone Co., of Pleasanton (P. O. Norwalk), to issue its preferred stock in the amount of $7,000 approved.

July 25: Hearing on complaint of commission upon its own motion against the Central Missouri Telephone Co. and the Middle States Utilities Co. for failure to furnish telephone service to their subscribers between Elmira and Lawson.

NEW YORK.

July 28: The McLean Telephone Co., with about 110 stations in McLean, Groton and Dryden, Tompkins county, and Summerhill, Cayuga county, petitioned for consent to the sale of its physical property to the Cayuga Southern Telephone Co., serving about 1,850 stations in Cayuga and Tompkins counties including Groton, Tompkins county.

The petition states that the price to be paid is $3,000. If the commission consents to the sale, the McLean company proposes to dissolve. The petition states that the McLean company's subscribers now have only part-time service, that the plant is in poor condition, and that many subscribers desire to be connected with the Groton exchange of the Cayuga company, thereby eliminating an existing toll charge of 14 cents. It is further stated that the Cayuga company can give continuous and better telephone service.

NORTH DAKOTA.

July 23: Approval given the sale of the Upham Telephone Co., of Upham, to James Corwin, of Deering.

July 23: Rate schedule filed by the Farmers' Telephone Association, of Lansford, approved. This company recently succeeded the Northwestern Bell Telephone Co. in Lansford.

July 25: Dakota Central Telephone Co. authorized to buy the Northwestern Bell Telephone Co.'s property in Sargent.

July 25: Dakota Central Telephone Co. authorized to establish 24-hour service and increase its rates at Strasburg; also to close its Hague exchange and serve subscribers from Strasburg.

OHIO.

August 19: Hearing on complaint of the Galion Better Business Bureau, of Galion, against the Ohio Central Telephone Corp., of Iberia, which alleges that rates at the Iberia exchange are excessive because they do not include free service through the Galion exchange, which is operated by the Northern Ohio Telephone Co.

OKLAHOMA.

July 24: Southwestern Bell Telephone Co. authorized to disconnect its long distance telephone lines from the exchange owned and operated by L. W. Kingdom at Sasakwa, until full amount due the Southwestern Bell company is paid, and until further arrangements have been made by Mr. Kingdom for continuance of long distance service to be handled over the lines of the Bell company. The commission finds that Mr. Kingdom owes the Bell company $1,773.89 representing collections made by him from business transacted over long distance toll lines of the Southwestern Bell company. Mr. Kingdom was found guilty of violation of the commission's order No. 912.

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